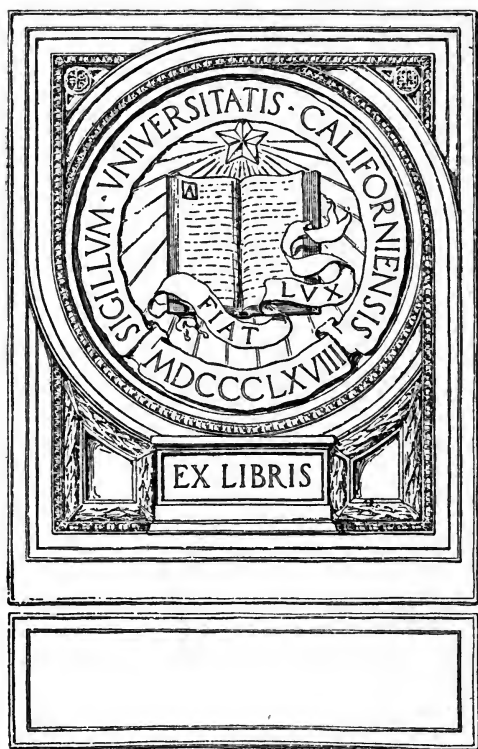


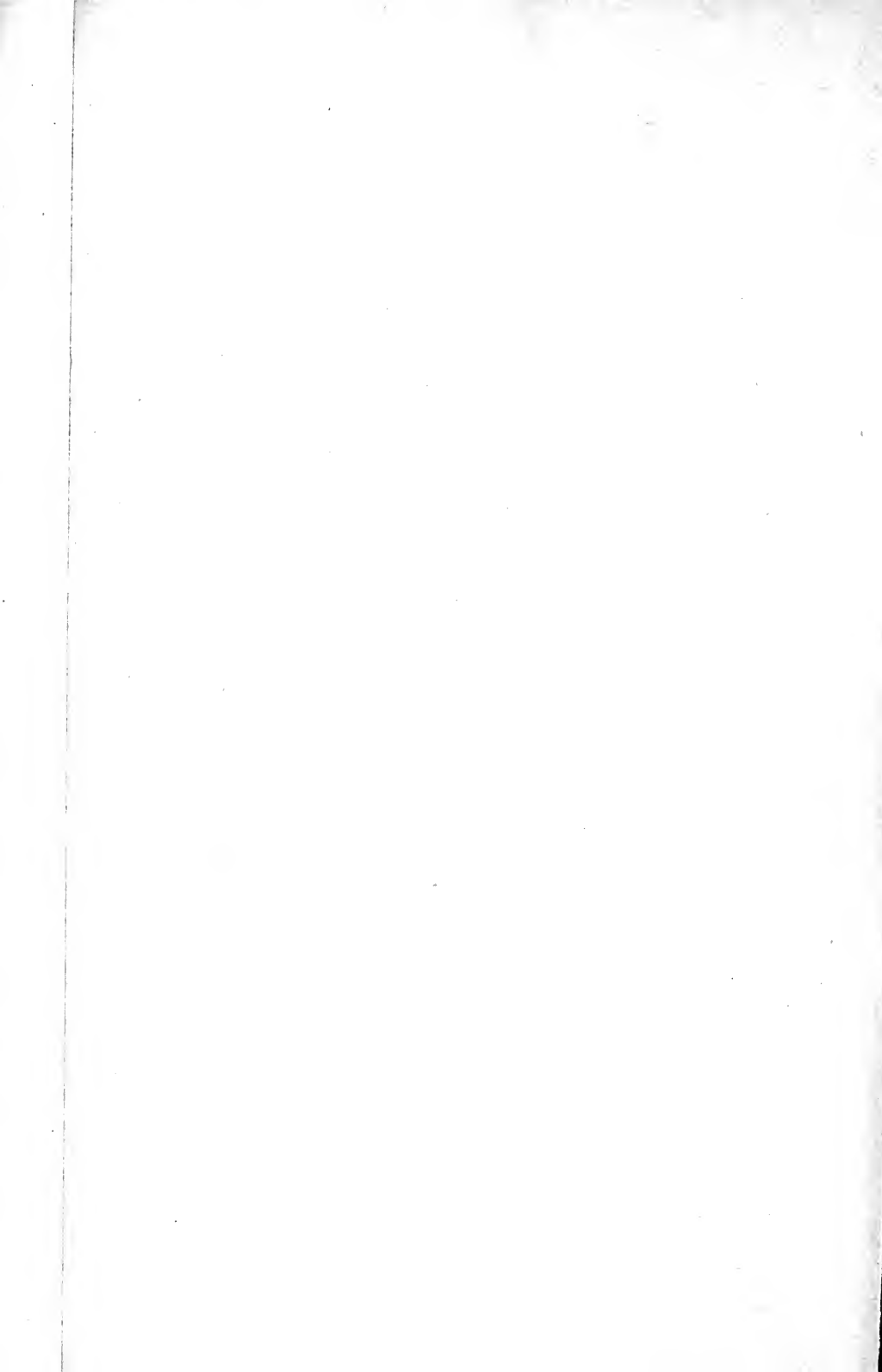
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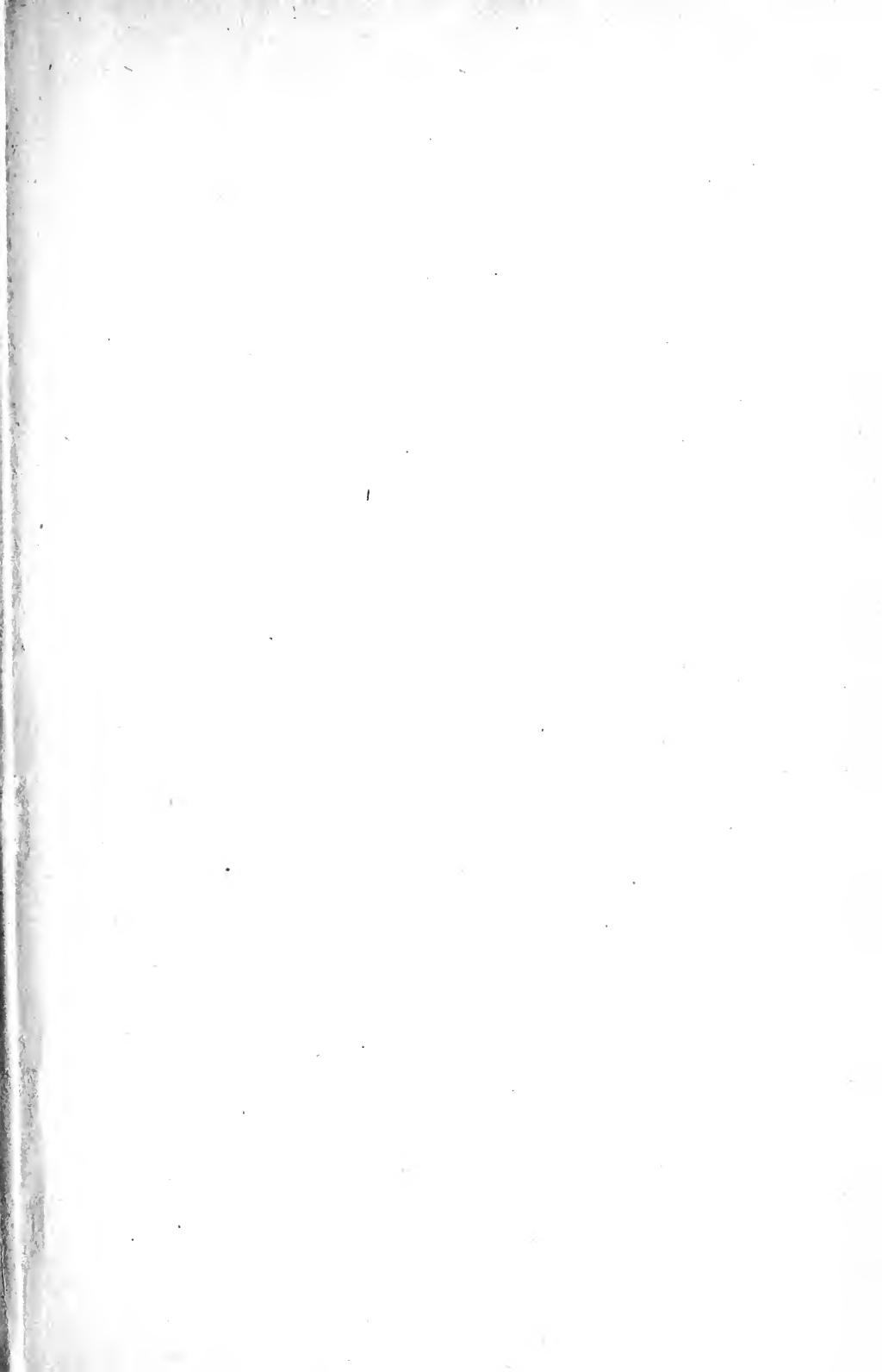


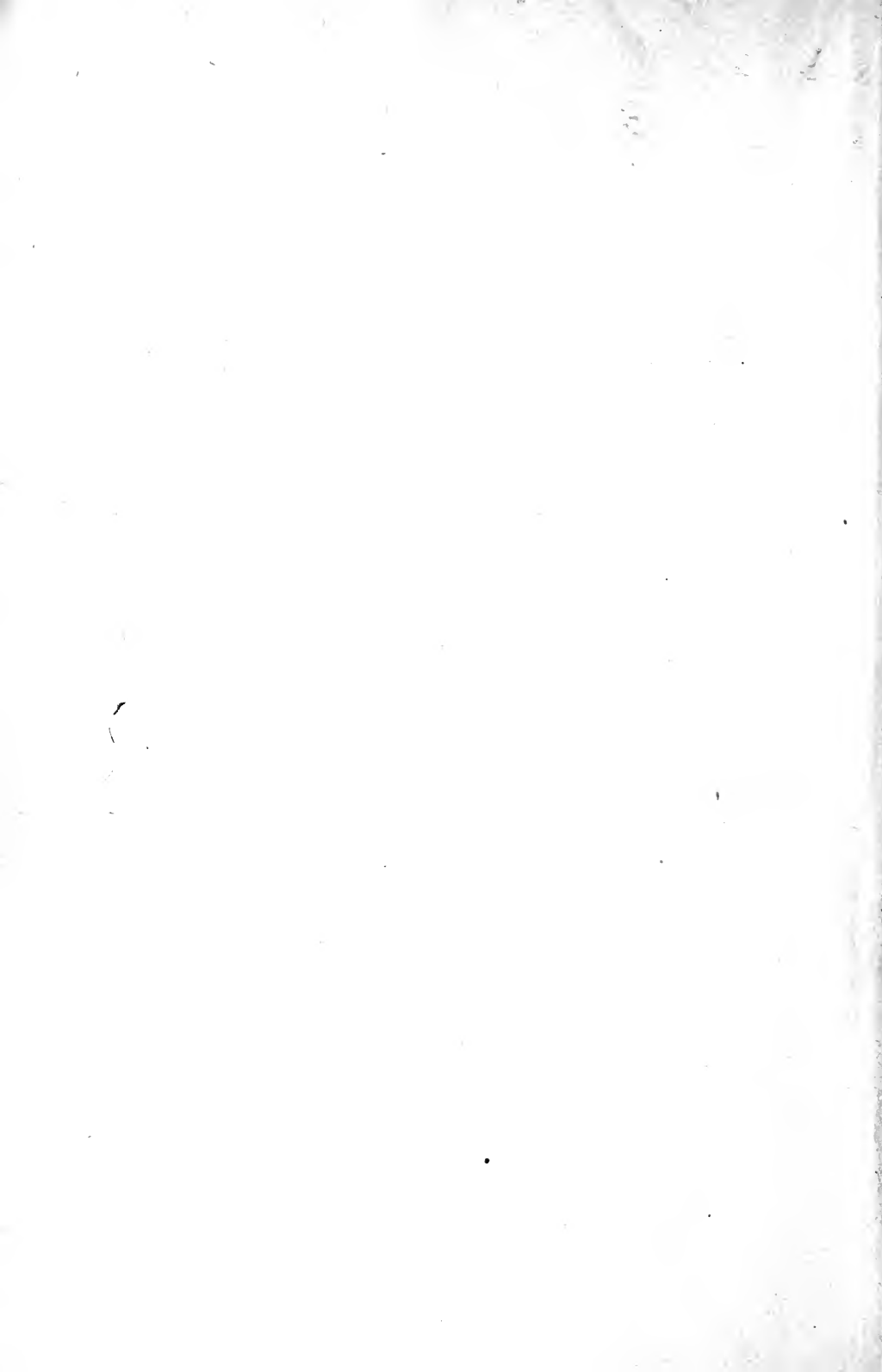
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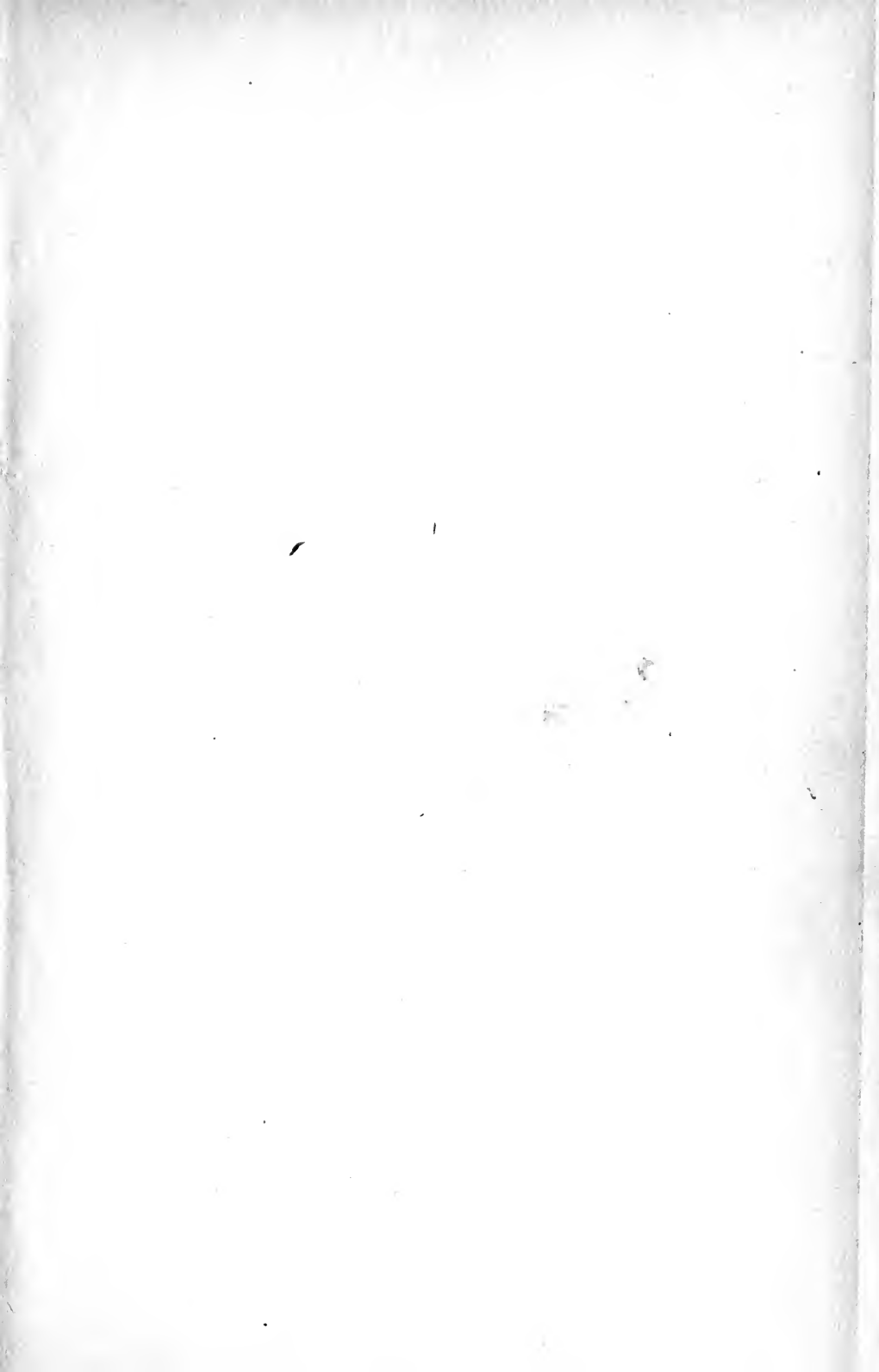


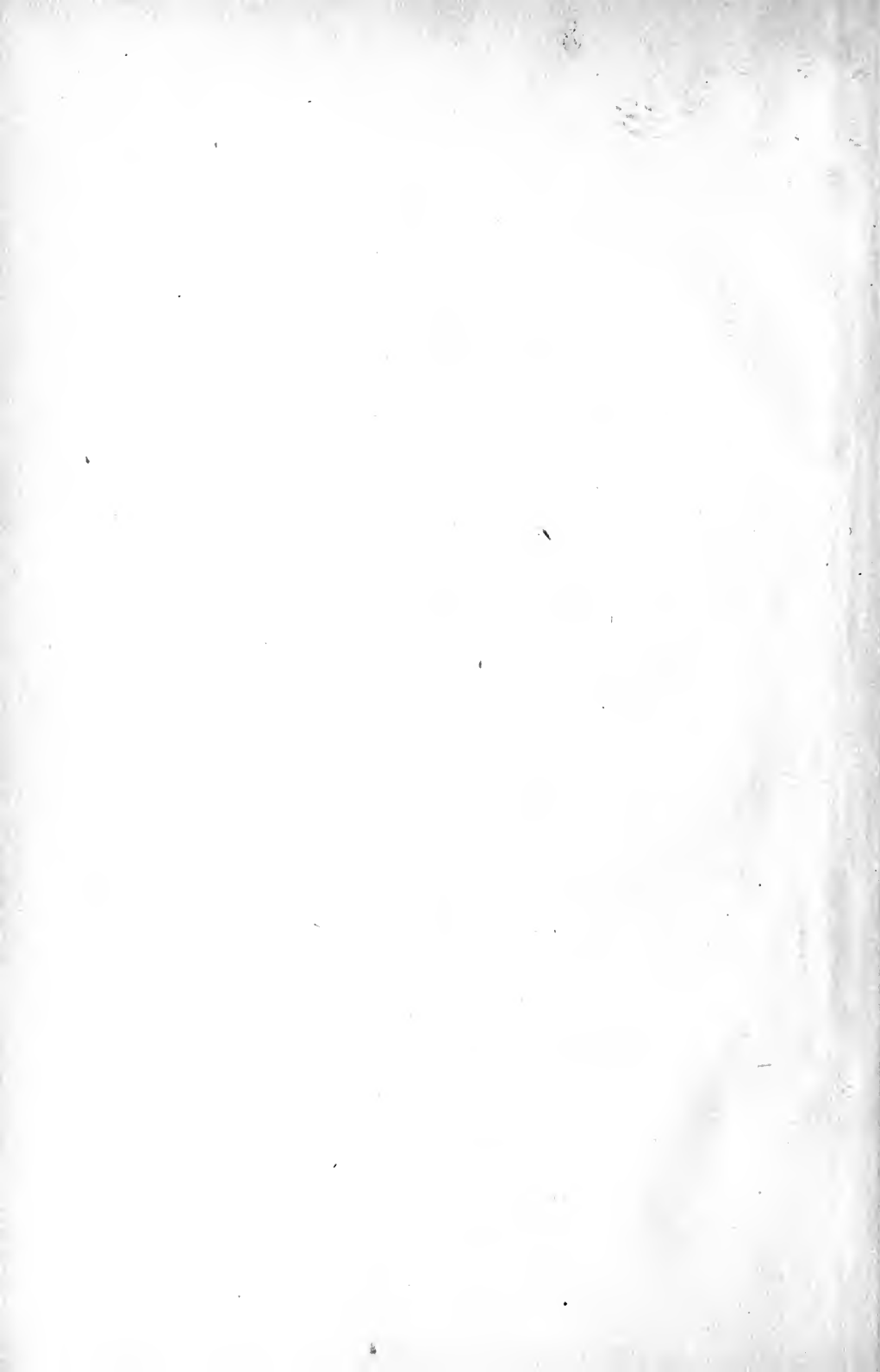
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PROCEEDINGS
of the
National Conference
on
Labor Problems Under
War Conditions

Under the Joint Auspices of
The Society of Industrial Engineers
and

The Western Efficiency Society

Held at

HOTEL LA SALLE
CHICAGO

March 27, 28, 29, 1918

WESTERN EFFICIENCY SOCIETY

ORGANIZED DECEMBER, 1912

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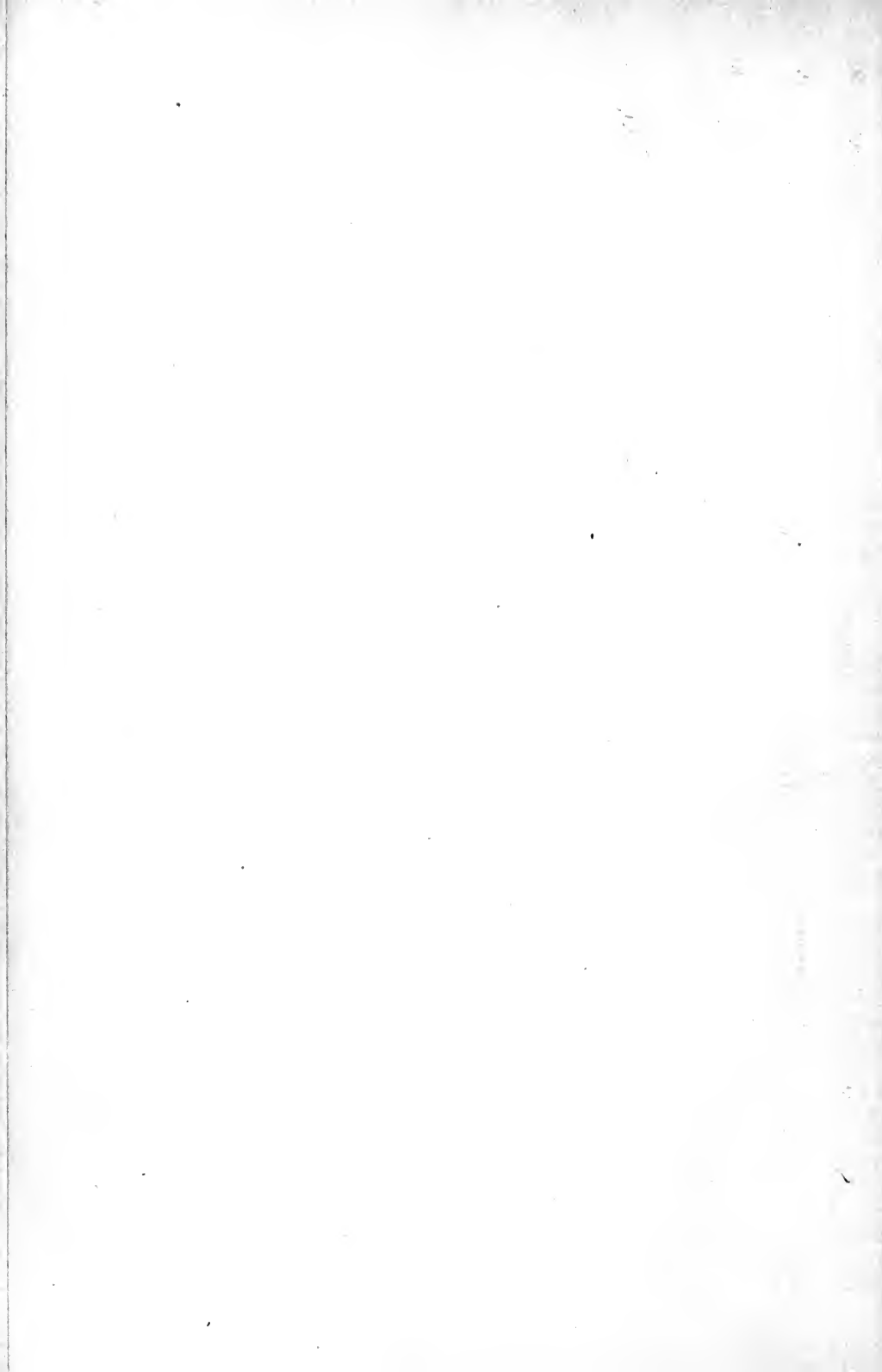
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CONTENTS

	Page
Invocation, Rev. Alfred F. Waldo.....	7
Address of Welcome, F. A. Carlisle.....	8
"The Purpose of the Conference," Irving A. Berndt.....	10
"Labor During and After the War," Harrington Emerson.....	12
"Some Things That Women Have Done and Are Doing to Help Win the War," Mrs. Joseph T. Bowen.....	21
"Conclusions of 1000 Questionnaires on Women in Industry," C. E. Knoeppel	28
"Some Things Women Should Do to Help Win the War," Miss Florence King	73
"Labor and Price Stabilization by Voluntary Agreement After the War," Barton T. Bean	82
Round Table Discussion—"Women in Industry".....	87
"Planning, Scheduling and Despatching," W. S. Ford.....	108
"Mechanical Aids to Man," A. Russell Bond.....	113
"Standardization in Machine Shop Practice and the Training of Operators," Ellis F. Muther	118
"The Relation of the Coal Conservation Movement to the Engineer," Joseph H. Harrington	129
"Maximum Production from Undrafted Labor," Irving A. Berndt..	133
"Cutting Out Red Tape," Col. A. D. Kniskern.....	143
"Scientific Management a Necessity of Modern Organization," F. M. Simons, Jr.	152
Round Table Discussion—"Mechanical Equipment—Its Function in Replacing Men." "Men Remaining—Securing Their Maxi- mum Production"	159
"Industrial Stimulation Through War Finance," James A. Davis..	176
"Re-Education of Crippled and Disabled Men," Douglas C. McMurtrie	181
"Business After the War," Willard E. Hotchkiss.....	183
"Mending Fragments from France in Canada," Norman A. Hill...	189
"The Shifting of New Man Power to Emergency Production," James O. Craig	194
"Team Spirit in Industry," Montague Ferry	200
"Pennsylvania Plan for Meeting After War Conditions," Lew R. Palmer	205
"A Post-Bellum Prophecy," C. E. Knoeppel.....	218



OPENING SESSION

"WOMEN IN INDUSTRY—REPLACING MEN"

Wednesday Afternoon, March 27, 1918

Mr. F. A. Carlisle, President Western Efficiency Society, Chairman.

The meeting was called to order at two o'clock.

THE CHAIRMAN: As is customary with the meetings of the Western Efficiency Society, we will first join in singing the Star Spangled Banner, after which the Rev. Alfred F. Waldo, of Riverside, will deliver the invocation.

The assembly joined in singing the Star Spangled Banner, after which the following prayer was offered by Rev. Alfred F. Waldo:

"Let us pray. This, our Heavenly Father, is Holy Week, and yet we know that no good work is too secular to be done in this week, and we rejoice and find encouragement and are grateful to Thee for the fine intelligence and the splendid enthusiasm with which the minds of these men and women set themselves to work for the solution of the problems of humanity. We perceive in the coincidence between the Holy Weeks, the Holy Week of old when Jesus Christ laid down his life for the redemption of the world on the cross of Calvary and this week when our brave men and boys in the spirit of the same Christ are laying down their lives freely on that western front, we perceive in this a coincidence which is suggestive and stimulating.

"We realize that we are living not only in a time but in a week and possibly on a day than which no other day aside from the one upon which Christ died has been more fateful in human history, more freighted, perhaps, with destiny for the future interests of mankind. And we pray that whereas that one of old who betrayed Christ did have the good sense afterwards to go out and hang himself, this traitor by which civilization is betrayed today, instead of terminating his own meaningless and woeful existence utilizes his energies for the murder of others; for him we pray to God that his erroneous and wicked plots may be confuted, and that Thou wilt send a divine power into the minds of the rulers of all of our nations that are associated for the vanquishment of autocracy and evil, into the minds of our rulers, our generals, our officers, Thou Lord send wisdom that they may plan boldly and wisely and effectively.

"And we pray for the men who fight that through faith in Thee they may become conscious of a physical and moral and spiritual strength which is not their own and yet which becomes their own because they receive it and utilize it. And do Thou grant that from out this dreadful maelstrom

and catastrophe which appears to us to be nothing but evil may come good for our own generation and subsequent generations of mankind.

"Bless the women and men here assembled in all our deliberations, those who plan and those who perform, and grant that unto us and unto this great people there may come a great blessing from heaven through Jesus Christ our Lord, Amen."

THE CHAIRMAN: The inestimable privilege has been accorded me to open this great convention with an address of welcome, and while on other occasions we have oftentimes started these things off with matters of pleasantry, conditions are such today that every man, every woman, in whose heart loyalty beats for humanity and for their country need solemnly to think of the occasion that lies before us.

Already one hundred thousand men or possibly more have laid down their lives on the blood-soaked fields of France, and thank God, one hundred thousand, yes, ten times one hundred thousand more, stand ready to offer the best they have that evil shall be confuted and that liberty shall reign throughout the earth and that the boasted efficiency of autocracy shall give way to the efficiency of liberty where every man has his own opportunity to develop, and the lands of the countries of the world are at peace and harmony.

And so today as we have gathered here there lies before us a problem such as men in no age have ever had to consider, a problem which means not only the victory for right in the present moment but also a problem the solution of which shall be felt in the ages that are to come, to untold generations; and by the brains that have been given us and by the science that we have developed and by our co-operation and unexampled energy, God willing, we shall show the world that the right shall overcome, and that peace and harmony shall once more obtain in the world.

So we have come together at the present time, not primarily for the advancement of any personal aims, not primarily for any personal aggrandizement whatsoever, but that we co-operating together may throw the force of our united ability into the crucible which shall bring forth that power that shall overcome evil which threatens the foundations of humanity in the world today. Therefore, my friends gathered together here today, let us proceed in this convention with that thing in mind.

We have gathered in our midst here men from the Atlantic seaboard to the Pacific coast who have come to join with us in this, and it seems symbolic to me that the whole land is being welded together and that out of this thing which promised to be a catastrophe shall come that which shall be a blessing to mankind.

Each of us within our own circle has the things which he must do, each of us has our local problem, but nevertheless underlying these things are primary principles, the employment of which shall bring about the result we so earnestly desire.

We find in this land of ours men and women everywhere whose hearts are beating enthusiastically, and though it seems at the present moment as though the reverse of arms is to be our portion, yet we know that behind those lines that for the last week have stood so heroically, that have paid with life's blood for every foot of ground in bloody France, are the

men who are finally going to conquer. But they cannot conquer unless behind the firing line, yes, behind the ocean even, there stand shoulder to shoulder men in the various industries who have but one supreme ambition in the present moment, and that is to see that every ounce of energy co-ordinated shall bring the fruit of victory to those who have fought so long.

So I say throughout this convention let us keep this thing wholly in mind and let us seize upon every fact that is given, upon every hint that comes to our ears, material which we can weld into our organizations, that where one unit has grown before we shall produce not only two but possibly ten or even one hundredfold. And this land, a mighty giant, slumbering yet, I am afraid, and not realizing the clamor of war because it is so far away, shall awaken from her lethargy, and grant that it be soon, and every man and every woman shall be on the firing line in America as truly as our boys are over in France yonder, trying to stem the tide of the barbarian invasion. If we so stand and so co-ordinate and so banish every disloyal thought, and help wherever help is possible, we shall achieve those aims.

As I said, it is my privilege to welcome you to our city and to welcome you in behalf both of the Western Efficiency Society of Chicago and the Industrial Engineers of America, and I hope and trust that the meetings which shall ensue shall be the most profitable that you have ever experienced and that you will be able to return to your homes enthused, and knowing not only men in your own locality, not only men in your own state, but men in every state and every locality are thinking the same thoughts and are striving to do the same things that you are striving for, and that the mighty giant, the potential power of America, shall be made manifest, and shall overcome the dreadful opposition.

One other thing. We are so far away it is difficult for us to understand, but nevertheless shall come to us as it should come to us the necessity for personal sacrifice, and I speak of these things now that you may take them home with you and impress on everyone that it is not enough to give of our ideas, not enough to give of our time, but to give of the very essence of ourselves, that we may attain this absolutely necessary result. In this city of two million and more souls, striving in their way to produce the things that are necessary, holding the reserve lines of the mighty armies abroad, you will find in the trenches men and women who are giving all their time, who are actually giving up all their lives that we may be successful in this endeavor, and if we have done nothing more in assembling men from the East and West and from the North and South than to send them back again as messengers to their own section filled with the enthusiasm of endeavor and the absolute surety of final victory, we have indeed done a great thing.

We have been successful in getting to attend this convention and address us men and women of note from various sections of the country; men and women whose past achievements have proven that they are people who can deliver the goods and will do so on the present occasion. So we bid you welcome to our city of Chicago and we bid you welcome to the interests of the Western Efficiency Society and of the Industrial Engineers, and a thousand times more we bid you to participate with us in

those things which shall bring victory, and if we do those things we have done well. Let us not forget then the necessity of the hour, let us not for one moment forget the battle that is raging with the result as it seems almost in the balance, and let us put our shoulders to the wheel, men and women alike, and see that the thing goes through. The criticisms and the dallyings and those who would disrupt and those who would hinder, let us brush them aside as obstacles to progress and let us see that nothing hampers us in our push forward to the enemies' lines, and if we have done those things, and if we have gotten the spirit of the occasion we cannot help but hold the lines in France, we cannot help but see victory coming though the cost be beyond the computation of man; and when that victory comes, blood-bought and dear though it may be beyond our comprehension, it shall be such a victory, God granting, that nothing shall occur hereafter that shall endanger the welfare of the human race.

You may not agree with all the means, you may think some man is falling down on the job, but give him constructive criticism and do not alone point out his weaknesses. Stand by him and not aloof from him, and see that the President of our country shall receive the united support of America today, that we may overcome and that we may come forth victoriously.

Once more I welcome you to our midst. May the profit of yourselves and ourselves united be such that it has been well worth our time to be here, so we can go back home stronger and better men and women for having mingled for a few days, gotten the other point of view, and go back again to hold our own position in the home lines and hold until successful endeavor shall crown our efforts. I welcome you.

We are very fortunate indeed to be able to have with us, to bring to us the real purposes of the conference, I. A. Berndt, secretary of the Society of Industrial Engineers, who will address you at the present moment. Mr. Berndt. (Applause.)

First I would like to read two quotations. Our President Woodrow Wilson has said:

"It is evident to every thinking man that our industry, on the farms, in the shipyards, in the mines, in the factories, must be made more prolific and more efficient than ever, and that they must be more economically managed and better adapted to the particular requirements of our task than they have been; and what I want to say is that the men and the women who devote their thought and their energy to these things will be serving the country and conducting the fight for peace and freedom just as truly and just as effectively as the men on the battlefield or in the trenches."

Secretary of War, Newton D. Baker, has stated:

"War has become a thing of industry and commerce and business. It is no longer Samson with his shield and spear and sword, and David with his sling; it is no longer selected parties representing nations as champions, and in physical conflict one with the other, but is the conflict of smokestacks now; it is the combat of the driving wheel and the engine, and the nation or group of nations in a modern war which is to prevail is the one

which will best be able to co-ordinate and marshal its material, industrial and commercial strength against the combination which may be opposed to it."

Were there no other justifications than the above two analyses, they alone should offer a reason for this conference. Coming from those two men who have been chosen to lead us, inspire and guide us in the present war for Democracy, they might easily be interpreted as a suggestion. Yes, even a command to us to hold this and many similar conferences and to seek to do that which it is our hope to do during the next three days.

But in addition to all this, every one of us are daily realizing more and more that our outstanding problem in the present conflict from the industrial side is the human factor. I can say very little to emphasize this more strongly at the present time; I know that you feel it.

A year of war, however, has very clearly emphasized certain definite divisions of this problem worth considerable discussion. It has brought to our attention certain distinct factors which are troubling manufacturers, employers, economists, our war leaders and the nation as a whole.

The two societies sponsoring this conference have recognized these factors and problems and it is proposed to discuss them fully, dividing them into their various elements. Speakers have been secured who, because of intimate contact and through broad capabilities and experience are eminently competent to bring before our audiences these problems and such solutions as they have found.

Their papers should serve to open up discussion which it is hoped will be participated in by the representative audience present, and these discussions will no doubt bring to light the ideas and solutions of many, many other men and women whose names should appear on our program but do not, either because it has been our misfortune not to know them or because the immensity of the subject and the proportionately short time we have to devote to it has made it impossible for us to place officially on our program all those names which we would like to. However, we are anticipating much from these impromptu discussions and are sincerely expecting the proceedings of this conference to contain a wealth of constructive and instructive matter which should have no little bearing on the progress of our industrial betterment during the next year and a great and distinct effect on the manner in which the labor problem is handled during the great stress and gradually increasing emergency which will be before us and which will continue until this war has been victoriously terminated, and ever thereafter.

As will be seen in the program, the entire subject has been divided into four sections.

First, consideration is given to the question of women in industry, not only because our particular brand of culture still places our women always first in our minds and hearts, but because this has seemed to be the most immediate problem confronting us at this time.

Next, consideration is given mechanical equipment and the part it will play in helping to solve the labor problem. This is a subject to which a complete conference could well be devoted, and time will only permit us to touch upon the more important factors.

Following this comes a consideration of the problem of handling the men remaining in industry, those men who through force of circumstances or because of unfitness are not permitted to shoulder a gun and do or die for our beloved country.

To secure their best services certain precautions are desirable, definite policies are advisable and particular practices absolutely essential. These will be discussed.

Finally and with an optimism justified by a sincere faith that our victory is not far off we intend to discuss even now as fully as possible in the time allotted the readjustments necessary in labor after the war, with a sincere hope that we may soon be confronted with this problem and in preparation of that time not so far distant when it will be our most immediate one.

This then is the field we propose to cover, and it is a large one, but all of our efforts and every minute of time and ounce of energy will have its full reward if through this conference light is thrown on our labor problems and solutions offered which will help in our war production sufficiently to bring the war's victorious end even one day closer.

With this justification back of us and the large field before us, let us go forward with the conference and devote ourselves to it without reservation knowing that our cause is just, our problem immediate, our services desirable and our work worthy because it is performed in the name of and for the sake of a Democracy and a country of which we are proud and for which even now our boys in France are fighting and dying.

May our efforts be fruitful and may they serve to bring these same boys back to us soon and in an undiminished number.

THE CHAIRMAN: The next speaker is a man who has devoted years of his life to the increasing of efficiency in management, and who brings to us today an experience that few may equal and none surpass. I refer to Harrington Emerson, consulting industrial engineer and president of the Emerson Company, who will speak on "Labor During and After the War." It gives me great pleasure to introduce Mr. Emerson.

MR. HARRINGTON EMERSON: Mr. President, ladies and gentlemen of the Western Efficiency Society and the Society of Industrial Engineers, and guests: There are two points of view that I have always held. One is that the principle is of more importance than the detail; that it is impossible to solve details rightly unless they are founded on correct principles. It is, of course, also true that even if principles are correct you may go astray on the details. Therefore, in speaking to you this afternoon, I shall touch rather on principles than on details. And secondly, a point of view that I have always held is that in any questions that come up between the employer and the employee it is the employer who is always in the wrong, is always at fault. He is the one that ought to know how to solve these questions, and not permit them to get into the acute stage, and it is to him we should look and not to the employee who has not had the same opportunity of study, who has not had the same broad experience.

Let us on this subject try to think clearly. The first question that

comes up to me is why should anybody work at all. That is the very first question. And then the next point that I shall try to touch on is how can anybody be induced to work efficiently. And thirdly, what problems confront the man who wants somebody else to work for him. And finally how can we meet the needs of the employer.

Why should anybody work? There are seven stages in a man's life, and in six of them there are no workers. The egg does not work, the embryo does not work, the infant does not work, the child does not work; the adolescent moons instead of working; the mature man, the mature woman, they have to work and the old man and the old woman they are past working.

Work is thoroughly distasteful to most people who are mature as well as to children. Children love to play. I remember one of my cousins spending a summer in the mountains of Pennsylvania and she was very anxious to get some berries, and so she tried to induce the children to pick for her quarts of blueberries and offered them ten cents. It did not interest the children in the least. Why should they spend their time picking blueberries? Ten cents meant nothing to them; there was nothing at the store that they could buy that they wanted for the ten cents, so they shrugged their shoulders and she had to go without her blueberries. I remember once in a railroad office in the afternoon about three o'clock I happened to hear one of the office girls fairly howl, "Oh, I wish it was five o'clock, I want to go home." That was her attitude towards work.

On that same western railroad on one occasion during a strike we hired Indians to come into the roundhouse. Of course, they did not know very much about locomotives but the foreman pointed out to them how to unscrew the nuts so as to take off a cylinder and to do other work of that kind, work that they could well do. The foreman would set them at it, go around to some other Indian, and he would come back again before night about a certain time, and the Indian was gone. He looked for him and he found him outside in the sun lying down and going to sleep. Work had become distasteful to him and he didn't know why he should work when he did not feel like it.

Another friend of mine was interested in a mine in Ecuador. It was way above the timberline, fifteen thousand feet. They had opened a gold mine there, and the only workers were a neighboring tribe of Indians. They had set a rate of wages that they thought was sufficient, and the Indians worked two days in the week. They were not getting out enough ore to keep the mine going, the overhead charges were running, and they pondered as to what they should do. Suddenly an idea struck them and they cut the wages in half. Then the Indians worked four days. Then it occurred to them that they had got on the right track, so they took another thirty-three per cent cut in the wages, and then the Indians worked six days a week. Those Indians were entirely wise. Why should they work any longer than necessary to satisfy their elementary wants?

When my brother was in the Philippines he was talking to a stevedore who was unloading a ship at that time, and the stevedore told him that when the ships came in they used to pay these longshoremen to unload a ship five cents a day in gold, ten cents Mexican. He said they paid them

off every evening and the longshoremen spent their money and were back again the next day and the work got done. When the United States government came in they considered any such wages as that an iniquity, and set the minimum wage for government work at forty cents a day in gold. He said, "Of course, we were obliged to follow suit, and now we pay forty cents in gold instead of five cents; we pay eight times as much," he said, "yesterday I had three hundred and ninety men at work. I told them to come back again today, that the ship is still unloaded, and they said, 'Si, senior'. How many do you suppose were on hand this morning?" He said, "just six." He said, "The others will not come back for a week until they spend that forty cents." He said that probably the six had lost it in gambling, and to make up for it some would not be back for two weeks. He said, "Why should they come back, they were paid off last night, why should they come back and work until the money is gone?"

I remember a story of this recent Russian revolution, a man who had been traveling there came back and told me that in one of the establishments there the workmen had taken charge of it and they had appointed committees to run the work, and very soon they began to run out of work. They went to see the Englishman to whom the factory belonged and they said to him, "We seem to have got out of work; we wish you to come over and advise us as to what the trouble is, why we cannot keep the factory running." So he went over and sized up the situation, and he said, "I will tell you what the trouble is. In the very first room where the first job is done those men are up on the committee and so the work is not prepared, and as long as it is stopped in that particular room it cannot go ahead anywhere else." "Well," they said, "we can see that, we understand that, they have been on the committee for some time and it is time we took them off to put somebody else in there, and we will send them back into the room to work." So they told this committee that they would now have to go back to work, but they said, those on the committee said, "No, not yet. We have been doing very heavy intellectual work and we shall have to take a six weeks' rest before we can go back to work in that room." So the committee took a six weeks' rest idling, and in the meantime the factory remained closed.

You think perhaps that kind of spirit exists only among the workmen. I remember a banker in New York who told me this story. He said, "We look around throughout the West and we see some brilliant young banker of great promise who is cashier or perhaps vice-president of some small national bank in a western city, and we realize that there is good timber in him and we call him down to New York. We offer him a salary of \$2,500 to come down to New York. He thinks that is a great thing to be called to New York, and down he comes, perfectly happy on his \$2,500 salary, and he works sixteen hours a day. The next year he expects a larger salary, he expects \$3,000, and he only works fourteen hours a day. The next year after that he wants \$5,000, and then he only works twelve hours a day. And then he works up to \$7,000, and he works ten hours a day. Then he gets about \$10,000, and he works eight hours. And so he goes on until he has got \$15,000, and he only wants to work four hours." And my friend said, by the time he was paying him \$25,000 a year he

didn't want to work at all; he wanted to have the time to spend his money, to go automobiling, to go golfing, to go down to Florida and elsewhere. And he said so he had found the higher the salary he paid them the less they will do. So that is natural. What does he get his money for unless he has the leisure to spend it in?

Siemens & Halske many years ago sized up this labor situation when they realized that there was going to be a great demand in the world for copper. At that time the only great copper mine in the world was the Rio Tinto, and so they got concessions for copper mines in the Caucasus Mountains. Those mountaineers had been running around the mountains herding sheep and goats and they had no notion whatever of going into the mines and working. In former ages they would have made slaves of these people and forced them in, but that was not possible in the nineteenth century, so here they were with their mines that they could not open up, and a great dearth of labor. They brought down and exposed in the country stores a whole lot of women's finery and they also brought down some women who wore that kind of finery and who went to the different dances; headgear, purses, necklaces, stockings, shoes, girdles, and so on were exposed in the country stores. The men have been working in the mines ever since.

People work primarily to keep alive; secondly, like those Caucasians, to help those they love; thirdly, because they like it; fourth, perhaps because they want to get ahead; and fifth, though very rarely, because they want to make the world better.

How many animals have been trained to work by man out of all the thousands of animals in the world? About half a dozen. The ox, the ass, the horse, the elephant, and then that one animal that has always worked with pleasure rather than from compulsion, the dog. The dog takes up his work with delight, he makes play of it; in that respect he is, perhaps, a model creature of all those on earth. I don't know any animal that converts its work so much into play as the dog. So rare is the faculty of work among animals that when anybody trains a lion, a tiger or a bear, or something of that kind, they put him on the vaudeville stage and we pay money for the pleasure of seeing a bear or some other animal work, because it is such a marvelous thing that any animal should work.

How can we get people to work? The employer is between two boundaries. On the one side is what he wants, what he would like to do, and on the other is what he can do. To illustrate by an analogy, if a man wants to build a railroad from New York to Denver, for instance, the ideal would be a perfectly straight line with a uniform grade all the way, while in fact we know that the early roads wandered up and down along the valleys, avoiding the mountains, climbing over the hills; they were kinky, very undulating and very long. There is the difference between what you can do and what you would like to do.

The same is true in agriculture. If you go into a hothouse, the man owning the hothouse raises exactly what he wants, where he wants it and when he wants it. If he goes out into the open field he trusts to the sun, the climate and the rainfall. It is the same thing with our human problem. There is what you would like to do and there is what you can do. In

this labor problem I would like to illustrate it by one of the oldest labor problems that we ever had in this country and that has gone perhaps farther than any other, and that is the servant girl question.

The servant girls are not tied together by any union. There was a time when there were ten girls for one mistress, one mistress was able to direct their work in every kind of way. At the present time, as we know, there are ten mistresses and only one girl. How have we met the situation? We are more luxurious than we were then. We have more things than we had in the previous generation. Civilization has not stopped, and yet the old days of household work has stopped. The laundry work is done outside, a great deal of the cooking and baking is done outside, light and heat is furnished from the outside, the meals you can go and take at a hotel or restaurant, and we bring in some specialist to wash the clothes and bring in another specialist to catch the mice and exterminate the roaches, and we have side-stepped the question. There are a few women who are still able to keep servants in their houses and they do it by outbidding their neighbors and making the conditions very much more favorable. That is one way, of course, of securing labor when it is scarce. Those are the only two solutions that there are. One is to sidestep the whole problem, and the other is to outbid your neighbor.

Some of the problems with reference to labor are national, to cut out useless work, to simplify necessary work. Others are individual, to adjust the work to the worker, to draw in younger workers, to recall older workers, to call in women, to substitute machines or go where labor is plentiful. This problem shifts all the time back and forth. It is like the western front, it is one of those problems that is never solved. The temporary solution depends on the man who has the ability to solve it, and there again we come up to this question of the employer.

I have often asked employers if they realized that there were only seven great activities in the world, that everybody who works at all does it in one of the seven great activities into which human endeavor is subdivided. The very first thing for an employer to ask himself is to which one of those seven great divisions he belongs, because that in itself will settle and outline many of his problems for him. And when you find that an employer does not realize the difference between those different divisions, how can you expect him to solve some of the minor problems that appertain particularly to one or the other of the divisions?

The first division of all is that oldest one of production; the appropriating, the reducing to individual ownership of the resources that exist in nature. Take first of all fishing, hunting of wild animals, wild fish. Then we come to agriculture. That depends on the sun, on the climate; lumbering, mining, all those I classify under the head of production, because they are taking what is already there and reducing it to individual ownership.

There is no connection in production between the price at which the product is sold and the cost of producing it. That is the very important fact about production. The problem for the man who goes into production is just exactly the opposite from the way he generally tackles it. It is not to produce something and then try to get a price for it; it is to find out what the price is and then go to produce something that is sufficiently un-

der the price to enable him to make a profit or to make the thing pay. You cannot establish by any system the relationship between the price that you can get for a natural product and what it costs you to secure it. Of course, you know in production you require men rather elementary of character to carry on this work on a large scale, with the help, very often, of rough machines.

The second great division is that of manufacture. That is utterly different. You produce iron ore, for instance, for a dollar a ton, and then you manufacture it into needles worth \$200,000 a ton, or into bed springs. There is absolutely no limit to the value you can put on a manufactured article, where there is most decidedly a limit that you can put on a produced article, because you come into competition with natural laws and the price is kept at a dead level. But when it comes to manufacture, you can take cotton thread worth twenty cents a pound and produce lace worth a thousand dollars an ounce. In manufacture you need an entirely different class of labor; very great personal skill.

The third great division is that of transportation. You take the object from the place where it is less wanted and deliver it at the place where it is more wanted, and you obtain a rate or a tariff or a toll for doing that. Transportation again requires entirely different characteristics from either manufacture or production.

A fourth division is that of storage, taking the thing at one time and holding it until another time, the element of time coming in and adding value to the product.

The fifth is that of exchange, of taking it from one man who wants it less and passing it over. In storage you have a rent, you exact rent. In exchange you take it from the man who wants it less and pass it over to the man who wants it more, and you receive a commission for doing that. The exchange is one of the safest businesses that you can possibly engage in, and that is one of the reasons that the Hebrews for so many centuries went into that particular line of business, because when they were oppressed, when they were objects of robbery, they were able in that particular line to hold their own better than if they had been in manufacturing where their plants could have been taken away from them or in transportation where their conveyances would have been taken.

But in exchange a man can sell something that is in China to somebody else who is in South Africa, and it never comes within ten thousand miles of him, and he exacts his commission for transacting the work, and it is on the whole an exceedingly safe business.

Sixth, we have the great domain of personal service for which a fee is exacted. Personal service may be such as the barber renders you or the man who blacks your shoes; it may be the physician, it may be the lawyer, it may be the preacher. In that case material is not handled at all, but it is something that is taken from the inside of the giver. He gives something that belongs individually to him and he transfers it to you, gives it to you, and for that he receives a fee.

Finally, we have the iniquitous division of those who are parasites, who don't render service but prey on the community.

I was recently talking to a great railroad official, and he said to me

that railroading was very disappointing, that he thought he would like to go into manufacturing, and that he had had some offers to take him into manufacturing. I advised him very strongly against considering it. He asked me why. I said, "I will tell you why, in railroading there is \$11,000 invested for each man in railroad employ. The total revenues of the railroads are about four billion dollars a year, and the total capital is about twenty billion, so that you have five times as much capital invested as you have turn-over; as a consequence you have to operate at a very low ratio, you have to operate at about seventy per cent or seventy-five per cent. That is, out of every dollar you receive you can only spend seventy to seventy-five cents in the actual cost of operation and at that you can only afford to pay five per cent dividends on your capital." I said, "When you turn to manufacturing, into which you think of going, see how entirely different the problem is there. The manufacturer has some five hundred to two thousand dollars invested per man. Some of the large manufacturers of the United States turn over their capital five times in the year instead of one-fifth, as the railroads do. One of the very largest concerns operating in Chicago operates at a ratio of ninety-seven to ninety-eight. That is, out of every one hundred cents that it receives it has spent ninety-eight cents in producing the article. And it pays on this capital twenty per cent dividends. A man who has been in a business where he has five times as much invested as he brought in, where he was accustomed to operate on a seventy per cent basis and was only expected to pay five per cent dividends, you suddenly transfer him over into a business in which he has got to operate fivefold for his capital, and operates as closely as ninety-eight per cent, and is expected to pay twenty per cent dividends, he would have a remarkably hard time. It would be very much easier for a manufacturer to go over into railroading and make a success of it than it would for the railroad man to pass from railroading to manufacture."

I submit that simply so that you will see that it is necessary for the man to consider his own particular business and his own particular problems before he can expect to solve them.

What about after the war? I have never considered the labor problem as a serious one. It has never struck me as more than incidental in the business. I know a large business at the present time that has to look for its clay that it uses in its work all over the world, in Greenland and different parts of the United States, and in South America. It sends people out all over the world looking for the particular kind of clay that it wants. It has to have an immense amount of power in order to treat this clay. Again it has men all over North America and into Canada, east and west, and into the United States north and south. I find it has caisson at the falls of the Zambesi and caisson at the great falls of South America, and men looking all over the world to find the place where they can secure power at a reasonable rate, and they will take their clay that they get in Greenland and carry it, if necessary, to South America to be treated; or they will take clay that they find in Asia and carry it to Africa to be treated. Now, to a firm that has a problem of that kind on its hands the labor question seems more or less incidental, because the other questions are so much larger.

Of course, any man that insists on staying in exactly the same city that his grandfather did and carrying on the business of his grandfather in the same way, undoubtedly he is going to have very acute labor problems which he can only meet as the housewife meets the servant problem, by outbidding somebody else, or by improving the conditions. But we do not want to forget that of the sixteen hundred million people in the world most of them are not working at over five or ten per cent of normal human capacity; that there is an absolutely unlimited storehouse of human energy that has not yet been touched and not been drawn on, a reserve perhaps as great as that which we have already covered by machinery.

We must not forget that in antiquity they had achieved in many respects a far higher efficiency without machinery than we have achieved with its help; that there were whole communities in antiquity that were able to live indefinitely almost without work. Not because they were not producers but because they had known how to produce with the slightest amount of expense. We do not want to forget that the cheapest form of transportation that was ever evolved was evolved in Africa in carrying the goods from the interior to the coast, that it was far cheaper than anything we have ever dreamed of with our railroads. We do not want to forget that the largest amount of transportation even in the United States today, the movement of material from one spot to another for the benefit of mankind, is not carried by the railroads, it is not carried by steam power, but is carried by the force of gravitation that costs us nothing. We do not want to forget all those possible reservoirs, and what is ahead of us is for each man to adjust himself to the conditions rather than to allow the conditions to master him, because if he sets up a particular set of conditions and then tries to succeed in them he has forged any number of fetters for himself. But if he chooses to look the whole problem in the face and go where it is most easily solved, there is an unlimited possibility ahead of him.

After the war what I want to see coming is this: Recently in Pittsburgh I read an editorial commenting about some professor out in San Francisco whose words I had not seen, but who seemed to have voiced very much the thought that I had, and this Pittsburgh editorial said that this professor had no vision, that what he had had was a nightmare. And it may be that what I feel now is no vision but rather a nightmare. It seems to me that what we have seen in Russia is merely the dawn of what impends more or less all over the civilized world. We have seen there to an extent that we would have believed incredible a few years ago, the absolute collapse and destruction of a whole civilization, that in my estimation it will take a couple of generations, at least a couple of generations, to build up again, and the Bolsheviki spirit that exists in Russia is rampant throughout the whole of this country.

Of course, I do not expect that we shall have anything similar to what you have seen in Russia. I am not as foreboding as that. But we shall nevertheless have a period of very great readjustment and very possibly a readjustment backwards instead of forwards. That is what I apprehend.

There are two ways in which wages can be advanced. One is the natural method, the proper method, the beneficial method, the one that has

tended to the uplift of the world. That is making the advance depend absolutely on the effort, on the gain of the worker. When the worker delivers more it is perfectly proper that the returns should go up. In other words, as unit costs go down wages can very properly rise, and they should rise. Under those circumstances the worker is tremendously interested in seeing that the unit cost goes down. There is a regular mathematical law there. Only to a certain extent can the unit cost go down and only to a certain extent can the wages go up.

When you have a system of that kind where the unit cost goes down and correspondingly wages go up, why then the worker is encouraged to help depress the unit cost. That is the attitude that he assumes.

I remember a great employer of labor who lived in Chicago saying on one occasion, "We view with great satisfaction the fact that our workers have been paid \$600,000 in the year more than they were paid last year, because we know that that increase to the worker meant a lower unit cost to us." So instead of feeling alarmed and depressed over the rise in wages he rejoiced over the larger sum that went to the men because he knew that was so correlated to the output that it meant a lower unit cost.

On the other hand, when you raise wages without any connection whatever with the unit cost you inevitably find that the worker takes his bonus in the form of more leisure, like the banker that I began by telling you about. The man will ask for eight hours instead of ten; he will ask for a fifty per cent increase in wages and then he will only do two-thirds as much per hour, because he prefers to take his bonus in the form of leisure. That is the spirit that is confronting us all over the United States today. It is the spirit that employers will have to face, and it is going to confront us, I think, to a very much greater extent after the war. A man who has once had high wages for small work will never again as long as he lives be satisfied with more work and perhaps lessened wages.

I remember one occasion—I don't remember whether I have told you this tale here in this same society—but I remember once when I was out on the Pacific coast going into a carpenter's house who asked me to come and look at his house. He built it himself, he told me, and felt a good deal of pride in it, and so I went over to look at his house, and he took me up into the garret and walked from the garret into the caller and all around. In the upper story there were men lying reading and smoking; coming to the second floor there were more men reading and lying around; coming to the first story there were again two or three of them sitting around quite peaceably. Altogether there were ten or twelve men in that house. I said to him, "These men are not working?" He said, "No." I said, "Is it a holiday today?" He said, "No, no holiday." I said, "Are they on strike?" "No," he said, "not on strike." I knew that there was a tremendous demand for labor at three dollars a day at that time in Seattle, and I said, "What is the matter, no strike, no holiday?" I thought it was perhaps some Swedish holiday. They were all Swedes and Norwegians. I thought it might be some national holiday. He said nothing of that kind. I just could not understand it. Why were these men not working, I asked him. I said, "Why aren't they working?" "Well," he said, "you see they go up to Alaska in April and they get seven dollars a day." This was De-

ember. "They go up in April and they get seven dollars a day and they come back in October, and it would be beneath their dignity to work for less than seven dollars a day." So they waited from October until April until they could go once more and get the seven dollars a day.

That is what I mean when I say that this spirit that has become rampant in Russia is more or less pervasive in this country also. The problem will have to be met by each man for himself. He has got to face it, and the man that has the ability to face the problem will find a solution. (Applause.)

THE CHAIRMAN: I regret very much to have to announce a slight change of program through the illness of the speaker who was to be here on this occasion, Mrs. Joseph T. Bowen, who I understand is sick, but who in our interest has prepared her paper, which will be presented to the convention. Although we unfortunately miss the pleasure of her presence we nevertheless will have a manifestation of her ability. We have been very fortunate in securing in our time of need the vice-chairman of the Woman's Committee of the Council of National Defense, Illinois Division, Mrs. Frederick A. Dow, who will now address us on "Some Things Women Have Done and Are Doing to Help Win the War." Mrs. Dow.

MRS. FREDERICK A. DOW: Mr. Chairman and friends: I regret exceedingly that our chairman, Mrs. Bowen, is ill, but I feel that it is due her that her own paper should be read as she has written it, and as I am vice-chairman I probably would have told many of the things which she has told in her paper, and it gives me pleasure to read them. I am sure you regret, as I do, that a mother with two sons in the service, one in military service and one in the navy, and whose sons-in-law are both engaged in the service, that a woman of that experience cannot be here, as she would, of course, give a great deal more vim and personal energy to it than I can. But I do feel happy in being able to present this splendidly written paper which does describe our work.

"SOME THINGS THAT WOMEN HAVE DONE AND ARE DOING TO HELP WIN THE WAR"

Mrs. Joseph T. Bowen, Chairman, Woman's Committee, Council of
National Defense, Illinois Division.

In almost every town and city in the country we hear the tread of marching feet as thousands of our young men are sent abroad, to enter the greatest conflict the world has ever known. In thousands of American homes there is a vacant chair from which the son of the home has gone forth to fight—perhaps to die—in defense of those principles and those ideals for which this nation has ever stood.

The call to the colors has come, not only to the men of the nation but to the women, and just as a hundred years ago our women sewed and knitted and preserved for the men of their families, so must the women of today sew and knit and conserve for the men of that larger family—the American nation.

At the beginning of the war the Council of National Defense in Washington had so many offers of service from women all over the country that they finally appointed a Woman's Committee, of the Council of National Defense, to have charge of the war work of women all over the country. This committee had at its head that splendid leader among women—Dr. Anna Howard Shaw. It appointed a chairman in every state in the Union, and, in Illinois, the State Chairman has the advantage of being a member of the State Council of Defense, and it is therefore somewhat easier in Illinois than in some of the other states, to co-ordinate the work under one head.

The Illinois Chairman has to assist her an Executive Committee of twenty-eight members. Sixteen of these women are at the heads of Departments, known as Finance, Publicity, Thrift, and Conservation, War Information, Registration, Speakers, Courses of Instruction, Food Production, Women and Children in Industry, Social Agencies, Allied Relief, Child Welfare and Organization. The last named department has about finished the work of organization throughout the state—the most complete organization of women that we have ever had in Illinois.

The state has been organized on the same principle as the General Committee. There is now a chairman in every one of the 102 counties, and these local chairmen have to assist them sub-chairman of Registration, Finance, etc. Every town and every city in the county has its own chairman, also every township. There are only a few exceptions. The purpose in having Township Chairmen is that they may look after the rural women who do not live in the towns or cities. In some districts we are still further promoting this organization by having a Chairman of School Districts.

The larger cities are organized by wards. Chicago, for example, has a chairman in every one of its thirty-five wards, and in some of the more highly organized wards there is a leader in every precinct and on every block.

The whole idea of this organization is that we may be prepared to meet any government request which may come to us for service which women may render. To illustrate: In the first Liberty Loan campaign the women of Chicago were asked to sell \$750,000 worth of bonds. They sold \$6,000,000 worth—and in the state they sold \$20,000,000 worth.

At one time we were asked by the Federal Food Department to secure signatures to the Hoover pledge cards. Speeches were made throughout Chicago and the state urging women to sign the cards. Patriotic meets were held in 268 of Chicago's public schools, and 672,000 cards were returned to Washington. When the government found it necessary to ask for the use of marine glasses for its naval officers, an appeal was made by this organization, throughout the state, asking people to send in their glasses and thus furnish eyes for the Navy. Over 3,000 such glasses have been received by the State Council of Defense, although we do not know how many were sent by women.

As an illustration of the importance of this organization, I might cite that some time ago when fuel was very scarce, the Fuel Administrator asked the leaders in Chicago's thirty-five wards to act as fuel distributors. These ward leaders were invited to a meeting of the State Council of De-

fense, where they were introduced to the coal dealers of their districts. Notice was given to consumers that when they needed coal they must telephone to the Ward Leader, who would send an investigator to find out if the demand was a real one, and if it was, then the fuel distributor in that neighborhood would be asked to send the coal. In this way, Ward Leaders have handled 16,339 orders for coal.

The Registration Department has been trying to get the women of the state to register for war service. This registration has been taken or is being taken now in thirty-five states.

Governor Lowden issued a proclamation asking the women of the state to signify their willingness to be of service. This registration was necessary in order that we might have knowledge of the woman power of the state, and know how many women could be depended upon to take the places of men who have gone to the front—as farm laborers, bank clerks, taxi-cab drivers, gas inspectors, postwomen, etc.; also that we might know how many women there are who can be depended upon to look after the various philanthropic and charitable associations in which women have so long been interested.

The Registration Committee trained 10,000 registrars. They found that an educational campaign in every neighborhood was necessary before the registration could be secured. Registration officers traveled throughout the state explaining the value, and the use to be made of the registration, and speakers were sent all over the city. As a result, 602,000 women have registered for war service, and the committee estimates that it has at work already 346,500 women. We have, however, 3,000,000 women in Illinois, and we feel that this registration is not large enough. An attempt, therefore, is being made at the present time to increase the number.

The registration cards for every county are filed at the county seat; those for Chicago are filed in the State Council of Defense building. Even before the cards were filed we had a government order for 350 stenographers, 200 filing clerks, 150 bookkeepers.

In many towns throughout the state it has been reported that the number of Red Cross workers has doubled as the result of registration.

Our effort is to make our registration cards talk. They are filed according to wards, and we have people working with them constantly to find out what the women will and can do. There is another committee whose task it is to put these women at work.

A large number of women whose sons or husbands have gone to the war and who have found themselves obliged to earn a livelihood, have applied to the committee for paid positions, and as a result an Employment Bureau has been started, and already it has on its lists the names of one thousand women who need positions. Unfortunately, most of these women are untrained, and are over 40 years of age, and therefore it is difficult to secure positions for them, although in the two months that the Department has been open we have secured positions for about 150 women.

Finance Committee

Our Finance Committee has undertaken to raise \$100,000 to carry on the work of the Illinois Committee. Its policy is to get women who will

agree to form units to raise \$1,000 each. Under this plan a number of entertainments have been given. At the present time a large entertainment is being planned to show a new moving picture of Belgium. This entertainment is to run for a week, at the Auditorium, beginning April 15th.

The Woman's Committee of Illinois has been given headquarters in the building occupied by the State Council of Defense, and the Council provides for its use telephones, postage, printing and the services of two stenographers.

Publicity Department

The Publicity Committee aims to get to the press every day an outline of what is being done by the women. It also intends to carry on certain stunts so that the work may be extended to all classes of the community. Last spring, for example, it held a large meeting for the cooks of the city. At this meeting patriotic speeches were made—the object being to have those who actually do the cooking realize the necessity of conservation. Recently the Department advertised that it would give prizes for the best candy made without sugar; and in connection with another department it gave an exhibit of the candy made from the best recipe, and incidentally sold 2,100 pounds of it. A prize has also been offered for the best camouflage meat recipes, which recipes have been published in book form.

Thrift and Conservation

The Department of Thrift and Conservation is sending out educational matter throughout the state, urging women to practice economy and telling them what to eat and how to cook it. Very recently, in connection with one of the men's committees, they took a large store on Michigan Avenue, where they gave a cornmeal demonstration—showing how to cook cornmeal. This demonstration was attended by 15,000 people. The recipes were given to all who came. This demonstration was so successful that it was copied by five of the large department stores, and the same demonstration is now being given in the foreign wards of the city; also, it is being sent down state.

Information Committee

The War Information Committee collects information from all over the United States and from foreign countries—in regard to women's work—which information it tabulates for easy reference, and from it much valuable data has been provided for the use of the Speaker's Department and for other women who are trying to arouse the women of Illinois to the necessity for action. The committee has published a series of articles on the war work of women in France, England, Russia and the United States.

Food Production Department

The Food Production Department in its propaganda is urging the importance of a larger yield to the acre and the planting and cultivating of a larger acreage. At present it is planning courses of training for girls as well as boys, in farm work; and it has prepared lessons on gardening for use in the public schools of the state. It is co-operating with the Women's

Land Army Association, which intends this coming summer to experiment with training courses for women in farm labor, on several farms where the owners have agreed to take groups of women for this purpose.

Speakers' Department

The Speakers' Department has 200 speakers, who have reached approximately 250,000 people. It is attempting to combat pro-Germanism, and is sending trained speakers of men and women to audiences all over the state. When it finds no audiences for the speakers, it endeavors to create them, and it is asking to have its speakers placed upon all club programs.

Courses of Instruction Department

The Courses of Instruction Department is pointing out to women where they can obtain instruction in any line of work they wish to enter. This Department publishes a bulletin showing where classes are held in Home Economics, Home Nursing, Red Cross, Commercial Courses, Telegraphy—including wireless—Motor Driving, Aviation, Engineering, Dramatics, Story Telling, and special courses in the free evening schools. It has a course—which it is partially supporting—to instruct teachers who, in turn, will instruct the blind and handicapped soldiers in the hospitals and convalescent homes. Whenever there is a sufficient demand for a certain course of instruction, a way is found to form a class in that particular study. It has opened six classes for non-English-speaking women and two classes for young girls. It has persuaded the school authorities in Chicago to start classes in the high schools in Gardening and Practical Motor Repairing—the classes to be open to boys as well as to girls.

Department of Women and Children in Industry

The Women and Children in Industry Department has published a report on Standards for Women's Work. It has made several investigations of munition factories where girls were employed and has made certain recommendations with which employers have complied. One of the committees of this Department is reporting on all violations of the Child Labor Law. It is urging the establishment of emergency Day Nurseries for the period of the war. It has an exhibit of women in industry in war time, and it has maintained a small social center in the Polish quarters of Chicago, where instruction is given to the neighborhood children. It is also giving to foreign-born women lessons in patriotism, in English, and in interpreting current events.

Social Service Department

The Social Service Department is interviewing and selecting volunteers who will do social service work. Already it has placed nearly 700 volunteers, and it has interviewed 800 others. It has provided with wool the women inmates of the state penitentiary, the Cook County hospital and the Tuberculosis Sanitarium, which they have knitted into comforts for the soldiers. About a thousand garments have been knitted up to the present time. An old woman was found in one of these institutions who had one ball of wool. She would knit all day, and ravel out her work at night

in order that she might knit it over again the following morning. When she was told that she might have all the wool she wanted and that the garments she made would be of real use to our soldiers and sailors, she burst into tears.

Health and Recreation Department

The Health and Recreation Department has twenty-eight physicians who are speaking on social hygiene to girls in clubs and factories during the luncheon hour. The film "How Life Begins" is being shown at these lectures. Already over 10,000 factory girls have been reached. The Department has a Recreational expert who gives courses in recreation and who is training leaders for recreational work. This Department also is forming Girls' Patriotic Leagues. Notices are put up in factories and the girls are invited to come to the nearest hall or settlement house, where they are given a patriotic talk and are asked to join the League and to pledge themselves to do what they can to help the country. When a group of this kind is formed, it is put in charge of a leader, who visits them in their homes and sees that they do not lose interest in the League. Already 8,000 such girls have been formed into Leagues.

Department of Child Welfare

The Child Welfare Department, with the assistance of the state authorities, has undertaken this winter to enforce birth registration. At the present time Illinois registers only 65 per cent of its births. We should like to make that percentage over 90 per cent, in order that Illinois may be put into what is known as the Birth Registration Area to which Massachusetts and other eastern states belong.

This Department plans also to establish a nurse in every community of the state, who will look after mothers and new-born babies, and see that they have the care which in country communities is so often lacking. Miss Lathrop, of the Children's Bureau, has ascertained that last year in the United States 15,000 mothers and 300,000 children died—many of them from neglect.

The Department also is talking of establishing a school for midwives, in order that our foreign women may have more expert care at the time of childbirth. It is said that it is more dangerous to be a baby in Chicago than to be a soldier at the front, and we know that for every soldier who is killed on the European battlefields, eleven babies die in the city of Chicago. It may appear to some people that this concern for the women who work and the babies of the state, is not war work. Some women who volunteer for service say they want to do something connected with the war—not the same old things they have always done. Patriotism, however, does not mean just the singing of our national anthem, waving the American flag and cheering our troops as they pass by. It means much more, and while our men are fighting at the front, our patriotism must show itself by guarding the rear from the enemies who constantly assault us there, such enemies as crime, greed, ignorance, tuberculosis, child labor, infant mortality, etc.—enemies which are doubly active in time of war and which are as great a menace to the nation as are the enemies our men are fighting every day upon the battle front. It is our business not only to conquer

these foes but to build a better foundation for the citizenship of the future.

There is perhaps now another reason why we should take particular care of our women and babies. I suppose if we had been present at the last good-byes said by thousands of our young married men who have gone abroad, we would have heard them say, "Good-bye; take good care of my wife and babies for me." This was a sacred trust given to us by these men who had to leave their loved ones to go "Somewhere over there" alone.

The world is no longer a stage, with the men and women on it merely puppets. It is a vast workshop in which every man and woman must do his or her share. The ancients used to say that "to labor was to work." It is also to fight. Work is the word of the hour, and the manner in which we work means victory or defeat. The men or women who will not work because they do not believe in war are not patriots, are not good citizens, and if they will not support this government in this war they are not entitled to its protection and really belong under the Prussian Eagle and not the Stars and Stripes.

To be a pacifist now is as if a fireman should fold his arms and dream of the day when all buildings should be incombustible, while the fire rages about him, and men, women and children burn to death before his eyes.

Our men are now in the trenches, in the mud and wet, living in it, sleeping in it, eating in it—suffering from vermin and filth; they have given up comforts and pleasures, home and family, everything they hold most dear; some of them have given up their lives. We are not asked—no matter what we do—to make any such sacrifice, but we are asked to unite and work together for the successful prosecution of the war.

Our men are fighting for the most righteous cause for which any country ever fought; they are fighting for the very life of the smaller nations, for democracy, for the liberty of the people of the world. If we who are left at home would stand behind our troops abroad, if we would have them fight efficiently, we must see to it that their families are adequately cared for, and we must also, in addition, pour into the war chest of the nation our time, our strength, our energy, our money—all that we have, all that we are; and when the war is over and we have won—as win we must—and peace is declared and our troops come home, perhaps with thinned ranks, let us be able to look into the faces of those who are left and to say: "You have fought nobly abroad, but we, too, have tried to fight at home."

THE CHAIRMAN: While it is a matter of regret that Mrs. Bowen was not able to deliver her paper, I am sure we feel that it has lost nothing in the reading by Mrs. Dow.

In launching a great convention of this kind, where the work of preparation has been going on for a number of weeks, and things have been very strenuous indeed, those most actively interested naturally feel keenly the initial opening meeting. While these features have been going on, these papers read, I have from time to time been observing the behavior of Mr. George C. Dent, secretary of the Western Efficiency Society and assistant secretary of the Industrial Engineers, and I have noticed that he has gradually relaxed, and I take that as a sign that he feels that the thing has started right; that it is going strong and going well. The type and character of the addresses that we have heard this afternoon are but a

sample of the good things that are to come, and I trust that every one of us will make every effort possible to attend every meeting of this convention.

I have no further announcements at this time save to call your attention to the Educational and Commercial exhibits at the other end of the building.

On motion the meeting adjourned.

SECOND SESSION

Wednesday, Evening, March 27, 1918

The meeting was called to order by the Chairman, Mr. Irving A. Berndt, manager Betterment Department Joseph T. Ryerson & Son. The audience joined in singing "America."

SECRETARY DENT: On the program for Friday evening we have Major Frank B. Gilbreth. As some of our members know, the Major was taken seriously ill with pneumonia several weeks ago. I received a letter from Mrs. Gilbreth this morning, which I would like to read.

Post Hospital, Fort Sill, Oklahoma,
March 22, 1918.

My dear Mr. Dent:

Mr. Gilbreth continues to improve, slowly but steadily, and is well enough now to appreciate all the "pulling" that his friends have been doing for him. I know it has all helped! Will you please thank everyone who has inquired, and especially Mr. Berndt and Mr. Gould, whose letters we received yesterday, and who will, I know, accept this word through you instead of a letter direct, that I may give just as much more time to nursing the impatient "patient" back to health.

For his great desire is to be "back on the job—quick!" In many ways I cannot see that he has ever stopped working! They say that he spent all the time before I came, while in terrible pains from the rheumatism that followed overwork, in trying out the "Case" crutches and tools for crippled soldiers, and in planning new uses for them.

And I know that after I came, when he struggled through the uremic poisoning and pneumonia, that he talked of the work in his delirium, day and night, hour by hour.

And even through the awful time when, but for the "pulling" we all did, he couldn't have come through; he muttered "The One Best Way" till I could only pray that it was Life!

Well, here he is—weak and still in danger, and a crippled soldier indeed—but as strenuous in spirit at least, as ever! And wondering half the time when he can begin to do things; and the rest of the time "What will they do for the Crippled Soldier Cause in Chicago."

Will you give his greetings to the Conference, to our friends, and to yourself. And rest assured that, though our bodies are forced to stay here, our hearts are in the good work that you are doing there for the causes that are dear to us all.

Sincerely,
(Signed) Lillian M. Gilbreth.

THE CHAIRMAN: No doubt all of us have already missed the Major and Mrs. Gilbreth, and it would seem only fitting that we send immediately some word to these loyal individuals, expressing our appreciation of this letter and our sympathy at this time. May I not entertain some such motion?

MR. EMERSON: Mr. Chairman, I would like to move that this convention instruct the secretary to send a telegram to Mrs. Frank B. Gilbreth, expressing our sympathy and our thankfulness that Major Gilbreth is recovering, and our regret that he is not with us, and our loss at his absence.

The motion was seconded and carried.

THE CHAIRMAN: This meeting, the second of the session, and consisting of the second half of our consideration of "Women in Industry," is certainly an important session. We will hear first from One Thousand Questionnaires on Women in Industry. This is the first report, the first analysis which has been tabulated under the supervision of Mr. C. E. Knoepfel, as a result of questionnaires sent out to manufacturers, industrial engineers, educators. I hardly need to introduce any further Mr. Knoepfel. You all know of him, of his good work. Those of you who were here at the last conference and many of the meetings of the Western Efficiency Society, have heard him before.

There is just one thing I would like to say about Mr. Knoepfel at this time. From my own personal analysis I think he is the type of individual that we need most right now. He is the type of man who has a keen ability to analyze the present situations and tell us his conclusions, whether they are agreeable to hear or not. Like the doctor, he may give us bitter medicine, but it will be good for us in the end. There has been, Mr. Knoepfel advises me, some little criticism on some of the pamphlets he has issued in which he has been called pessimistic and a calamity howler, but is it not necessary for us just at this time to have some one to tell us just how serious the situation is and just how we need the sort of attention that we attempt to give to this problem at this conference? Certainly besides telling us the problem Mr. Knoepfel has always given us constructive suggestions, and this, of course, we know will come tonight. And I say to you that I think no matter whether we all agree with Mr. Knoepfel's conclusions, he has brought to us something which ought to stir each one of us and make us work harder during this conference and after its close.

I take great pleasure in and consider it a privilege to introduce Mr. C. E. Knoepfel, counsel on organization and management, New York City. (Applause.)

MR. KNOEPEL: Mr. Chairman, ladies and gentlemen: The American people have never yet refused during a critical time to fully measure up to a situation, and with jaw out and on tiptoes face it with every intention of going through to the limit. And while it may be true that some of my conclusions tonight may be considered as pessimistic, I want to say that the basis of it is optimism, a realization that sooner or later, it don't make any difference when, this great nation with the allies will beat Ger-

many decisively. But inasmuch as we have many things to do before that time, I feel it necessary as a prelude in the discussion of the question of Women in Industry, to go somewhat into the things that should make us sit up and take notice.

WOMEN IN INDUSTRY.

By C. E. Knoeppel.

Are Women Going to Be Needed in Industry?

The first question to answer, in considering this great subject, is whether or not we need women in large numbers in industry. If not, any extended treatment or discussion of the subject is unnecessary. If we do, then the next question to decide is, whether we will need them now, or later on.

To answer the first question, three important and vital factors must be taken into consideration, **most seriously**.

1. The present military situation.
2. German strategy.
3. The shipping situation.

The Present Military Situation.

Germany in addition to controlling the destinies of Austria-Hungary, Turkey and Bulgaria, is to all intents and purposes, mistress of Serbia, Belgium, Poland, part of France, part of Italy, Roumania and Russia. The elimination of one country after another, gives Germany access to rich deposits of minerals, oils; vast wheat fields; and labor of conquered areas, through deportations; her several million prisoners of war, who are trained men; 150 divisions of her soldiers from the Eastern front, to use as she pleases; the troops she can recruit from the captured Eastern sections, estimated at from 500,000 to several million seasoned fighters, who will be glad to fight for food and drink and money to send home, all of which she can concentrate on the Western front, the Italian front or both, and which so far have been defended admirably by the Allies.

Can Germany break through, take Paris and then attack England? The foremost military expert in this country states that the result on the Western front is a military stalemate; that it has been demonstrated that no frontal attack by either side against the other, can break through, nor can the long thin line be turned, with Switzerland at one end and Holland at the other.

Supposing however, that Holland or Switzerland or both, because of economic necessity or other reasons, are forced to join with the Central Powers? Is this an impossible outcome? Not if one interprets correctly the statement recently made by Sir Auckland Geddes, Minister of National Service, in which he said that the disposition of the German Armies on the British front, was most remarkable. He further said:

"They have placed mass upon mass and Germany's military object will be to strike at England. I have no doubt that Germany will strike not only at our forces in France, but also if she can, at the heart of England. Men in enormous numbers are needed, including men up to 50, to join for home defense."

Nor is he alone in this concern, as is evidenced by the statement of Maj. General Sir C. F. N. Macready, Adj.-General of the British Army, who said:

"Every man that can be spared from the industries is badly needed. Every woman that comes forward helps her country by releasing a man. We appeal to them to answer the call."

Can Germany be beaten economically? Not according to Ex-Ambassador Gerard, who knows the situation from four years of first hand study, and who said:

"There is no chance of starving Germany and there is no chance of winning through a revolution in that country; Germany can feed all except her old people, whom she leaves to die; before they would starve themselves, they would starve 10,000,000 Poles, 5,000,000 Frenchmen, 2,000,000 Belgians and 2,000,000 prisoners of war; the only peace she would adhere to would be a peace that really gave her the Victory."

Mind you, he said this before the capitulation of Roumania and Russia, which places the Central Powers in a much stronger position than ever.

As a result, the Kaiser now defiantly shouts, "We want peace and shall seek it but the victory of German arms must first be recognized."

Even if Germany gives up her captured territory, Pan-Germany will be an established fact (Germany, Austria-Hungary, Turkey and Bulgaria) with a population of 150,000,000, capable of maintaining an army of 30,000,000.

Truly not a pretty picture when we see, after nearly four years of war, a successful conquest on the one side and a successful defense on the other.

German Strategy.

What is the reason for the above condition? Military Preparedness? Yes, to some extent, but not altogether. Germany planned for a short war you will remember, but as the saying is, "got left" and had to plan all over again and build a new machine. She had other weapons which she had been using for years.

The Allies as they were for three years, were in a much better position from the standpoint of materials, men, money, command of the sea and ships. Practically all the inventions now used in warfare, were of American, French or English origin. This country as a neutral, was a gigantic storehouse for the Allies.

What accounts for the successful conquest of Serbia, Roumania, Russia and part of Italy while Germany was holding that Western Front? German strategy, nothing more nor less, a fact admitted by Lloyd-George, who in a speech on November 12th last, said that after three years of war the Entente had no plan of strategy.

I wish every one here could read that admirable and illuminating article "Political Strategy" by Andre Cheredame in the March issue of "The Atlantic Monthly." As he says:

"As a matter of fact, this war not only is not solely a military and naval war, it is in addition, a geographical war, an ethno-

graphical war, an economic war, a war of national psychology. To define its endlessly complex character by a brief phrase which includes all these factors, we may say that it is a war of **political sciences.**"

He points out how the invasion of Roumania had been planned by the staff in Berlin, with the aid of a practical application of political science; how it was known that a system of spying had been organized in the Roumanian Dobrudja, by Germans who alleged archaeological explorations as a pretext, for their travels, and thus acquired valuable information as to the swampy ground, which enabled them to have small bridges and movable floors all in readiness for the conquest; how side by side with geographical study with the ethnographical research, which made it possible to effect a general uprising of Bulgarians and Turks in Roumania against the Roumanians; how from an economic standpoint, merchants, experts in cattle and cereals and specialists in political economy, assembled behind the German lines, to consolidate the gains and exploit the country, after the invasion; how national psychology was responsible for breaking down the resistance, or morale of the people; how on a much vaster scale, these same factors were at work in the downfall of Russia and of Italy, and as Marcossou says is now being used against Spain.

The conclusion and findings of this remarkable man who studied the terrible strength of Germany for twenty years, are nothing short of uncanny. He states that from the Battle of the Marne, down to the offensive against Italy, a period of 38 months, the whole strategy of Berlin, based on a plan developed in 1895 or 23 years ago, was as follows:

1. To organize an immovable offensive on the Western front, while pretending now and then to attempt a genuine attack.
2. To carry out without pause a series of circular offensives against Russia, Serbia and Roumania, in order to seize one after another, the territories of those states, which are essential to the constitution of Central Pan-Germany according to the plan of 1895.
3. To take advantage of these successive offensives on the Eastern fronts, to go to the very vitals of Germany's allies, properly so-called, that is to say, under cover of helping Austria-Hungary, Bulgaria and Turkey to defend themselves against Russia, Serbia and Roumania, to organize those three countries militarily and economically and to the precise degree and in the precise form necessary to bring it about, that even at need, without changing their ancient names and the frontiers of 1914, they should contribute to practical purpose and almost without suspecting it, to the constitution of Central Pan-Germany.

The remarkable thing about it is that this man submits a copy of a map contained in a booklet published in 1895 entitled "Greater Germany and Central Europe about 1950."

The similarity between the map of 1895 and the performance of 1917 is sufficient evidence that there was more to it than just the military aspect. Plan and strategy are responsible. As Cheredame says:

"Thus on the Eastern front they have stopped on lines laid down beforehand, even when they had before them no Russian troops capable of opposing their further advance. Our map also enables us to declare on the most irrefutable testimony, that the offensive against Italy, which was such a surprise to the Allied Staff was provided for most definitely in the plan of 1895."

This fact was recorded by Italian aviators, November 22nd, and confirmed by German Officer prisoners.

It is further shown that Verdun offensive was really undertaken to offset allied plans for an offensive through the Balkans. The 1895 map line falls short of Verdun as it falls short of Venice; that Portugal is to be detached from the entente; that Switzerland is to be violated, enabling Germany to seize Marseilles and Toulon, thus cutting France off from the Mediterranean, leaving Germany free to deal with Spain according to plans already laid down and outlined by Isaac F. Marcossou, in the "Saturday Evening Post."

Hellish, isn't it?

The Shipping Situation.

So much for the present military situation and the reasons for it. I dwelt on both at considerable length, in order to drive home to you the seriousness of the situation, in order to show you that Germany, stronger than ever, will take a lot of smashing before she is defeated, in order to indicate that both time and intense effort must be expended before we will win this war.

If all the Allies were at maximum efficiency today, it would still take a long time to defeat Germany decisively, for while she is hanging on to that Western Front, which experts tell us cannot be broken through, she is consolidating her gains in all captured territories, securing the benefits therefrom and using their resources against the Allies.

As the Allies are not at maximum efficiency, it will take a longer time, estimated as from three to seven years, and the reason the Allies are not at maximum efficiency is SHIPS.

For every ton of shipping built by the Allies and neutrals in 1917, the submarines sank 2.45 tons. During 1917, the submarines accounted for 6,623,623 tons. Great Britain and this country built 2,703,275 tons.

The sinkings so far this year, according to P. W. Wilson, American Correspondent of the London Daily News, are equivalent to 3 large ships daily, or 21 per week, of "over 1600 tons," as the British state it. The average citizen ignores the fact that the phrase "over 1600 tons," really means about 5000 tons, consequently the losses as indicated by February and March sinkings of this year are:

Weekly	105,000 tons
Monthly	451,500 tons
Yearly	5,418,000 tons

Here, however, is the thing to think about. When the British talk of tonnage, they mean gross tons. When we speak of tons, we mean deadweight tons. In other words a 5,000 ton ship as the British talk about it, is a 7,500 ton ship as we express it. Our program was 6,000,000 tons

for this year, as you will remember. Mark Sullivan of "Collier's" predicts that it will be 3,000,000 tons or 2,000,000 tons as the British express sinkings. The President recently expressed his gratitude over the fact that we would produce between 3,000,000 and 4,000,000 tons. Call it 3,500,000 dead-weight tons or 2,233,334 gross tons. If Great Britain turns out its normal tonnage (it produced 1,181,497 tons in 1917) it will mean 3,514,808 gross tons between us. This means that during 1918, if the Germans keep up **their present sinkings, for each ton built 1.54 tons will be sunk, or 1.93 to one as the average for 1917-1918.**

The Allies are sinking or destroying 23 submarines per week; the Germans are building 38 per month. This is at the rate of 1.65 to one.

Consider this also. It takes four to ten tons of shipping to transport and maintain one soldier abroad. The average is seven tons. To transport and maintain the army, Senator McCumber stated we would need abroad 7,000,000—would require 49,000,000 tons of shipping. **All the Allied and neutral shipping afloat is 42,000,000 tons with the submarines slowly eating into this amount.** To even transport and maintain an army of 2,500,000 men, and we won't do our share with less—would call for 17,500,000 tons of shipping, or 40 per cent of all the shipping available. **And shipping is being destroyed twice as fast as it is being built.**

If we cannot maintain a big army abroad through lack of ships, enormous quantities of aircraft, rifles, locomotives, trucks and automobiles, at the present rate of manufacture, will pile up in our ports, which will bring about industrial disorganization, as we will have to stop making war products, all of which shows that the key to our successfully waging this war is ships.

The neck of the bottle is ocean transportation, for we are building war materials five times faster (Collier's) than we can transport them, and yet we talk of discontinuing non-essential industries. Hamilton Holt, editor of Independent visited 14 shipyards from Philadelphia to New Orleans—contracts 260 ships—50 on the shipways. Talked with shipbuilders, Government inspectors and workers and feels there will be no ships delivered complete to the Government for the next six months.

If we can't get ships, and the above clearly indicates this—unless we double or triple our ship construction and we are undertaking a tremendous task as it is—it means but one thing for all of us to look squarely in the face—wait until we can get ships enough to put over the real American punch—wait, while Germany gets stronger, making it more difficult for the Allies to decisively beat her.

We are going to get the ships, and they will be built faster than they are sunk, and when we have them we will put an army and supplies into Europe which with the Allies will put over the knockout. But not until every man and every woman, every boy and every girl, every grandma and every grandpa, have done, not only their bit, but their utmost to win the war.

So you see that from the standpoint of the present military situation, the superior political strategy of the Germans, and the lack of shipping, a long and bitter war is ahead of us, requiring millions of men in the field.

Let me give you an idea of the size of the direct and indirect army needed to wage this war victoriously.

We are told that the plan is ultimately to have 5,000,000 soldiers abroad. It is estimated that it takes 6 1-2 persons, on farms, in mines, on railroads, in ships and in factories to maintain a soldier. This then means an army of 37,500,000 persons.

Statistics show that there are:

45,000,000 between ages 18 and 45

4,500,000 between ages 15 and 20

6,000,000 between ages 45 and 60

55,500,000 Total available

37,500,000 needed in war pursuits

18,000,000 available for regular activities

As I see it the above answers our question as regards whether we will need women in industry or not. We will need them in increasing numbers before Berlin capitulates.

The war can only end in one of three ways.

A—Lose

B—Draw

C—Win

If we lose, the women need not concern themselves about going into industry—the Germans will see to that. If the result is a draw, we can prepare our boys and girls for the supreme struggle in about 25 years. If we win, it will be when the 100,000,000 of us get behind the war as one man.

The President said to the farmers:

“The culminating crisis of the struggle has come, the achievements of this year on the one side or the other must determine the issue.”

May the Almighty help us if this is so, in view of the points brought out in the foregoing. May we awake to the seriousness of the thing. kill off forever this mad dog of Europe, and destroy this poison which would set the world back one hundred years.

There must be no draw. We cannot lose, if posterity means anything at all to us. **WE MUST WIN.**

How long will it take? Colonel Sir Berkeley Moynihan. C. B. Senior Consulting Surgeon of the Royal Army Medical Corps of the British Army, said November 8th, last, before 1500 physicians and their wives at the Waldorf-Astoria in New York:

“I am asked how long the war will last. I will say for America that the war will have just begun, when every man of military age shall have offered his life to his country; when your wealth, your souls and your honor have been offered, when you have mourned your dead by the hundreds of thousands.”

When will it end? Let young Jimmy Gerson (“Over Here” by Earl Derr Biggers in “Collier’s”) tell us:

"I'll tell them when it will end—it will end when the men who trampled down Belgium and France, who murdered people like cattle, who ruined the fruit trees and burned their homes, it will end when those men feel the grip of the world at their throats. It will end when the crowd who started this war of lust and loot are in full retreat, when Willie down, at Verdun is shouting to papa at Berlin: 'Come, for God's sake!' and papa at Berlin is screaming to Willie at Verdun: 'Run for God's sake!' It will end with the siege of the Rhine!

"That's when it will end if it's left to us fellows who are going over. We're ready to stand in ice water up to our waists, to live with rats in a rain of German shells, to go over the top and be finished. Nobody need worry about our boys over there. But how about the bunch left over here—the crowd that want to know how soon it will end? Are they going to queer us? Will they fall for the German tricks? Will the pacifists turn their blood to water? Only one thing can do for us and that isn't the German army. It's our own people at home. Maybe some guy in Terre Haute will get tired putting three-cent stamps on his letters. Maybe some fellow in Cleveland will get sick of the graham bread. Maybe some fat little soul in Denver will get to worrying about his profits. And they'll come together and decide that it's no use fighting it to a finish—and where will we be? Done for, licked, finished; thousands of dead for nothing—all because the people at home hadn't the guts to stick it out!"

In other words this war will be won when all have given their time, their money, and if necessary their lives to the cause. Multiply all the latent ability and resources of each person by 100,000,000 and what will we have? The Kaiser in exile. If we don't, he may decide to move his capital to Washington.

II.

Are Women Needed in Industry Now?

We will need women in industry, of that there can be no question. Do we need them now? My study does not indicate this, but it does indicate conclusively, that later on we are going to need them in increasing numbers, and that now is the time to prepare and develop plans and policies, so that when we begin to properly utilize their abilities, we will be able to proceed along logical, fair and well planned lines.

The reason that we do not need women in industry now, is simply because we are not using our man power to the extent possible, nor as efficiently as we can. In this connection, the following letter will prove interesting:

Dear Mr. Knoeppel:

This afternoon on the Century I have read and reread your wonderful article "American Industry Needs Women," in the December issue of "100 Per Cent."

And reading, I have reflected.

At lunch today, a man checked my hat, another served my food, another man removed the dishes—and still another brought my cigar.

Yet we pretend we are organized for war.

After lunch a man shaved me and another man shined my shoes—while I read a paper sold me by a man who might have been, should have been, **SHOULD BE** at war. A man carried my bag, to the sidewalk, another man opened the door of a man-driven taxi to take me to my train. A man opened the taxi and another man grabbed my bag; a man sold me my ticket and another man examined it. On the train **TWO** men took up the ticket, and a polite young man who might be, **SHOULD BE** fighting, is typing this outburst to you.

Yet we pretend we are organized for war.

Shatter the pretense if you can and will. Shatter it, some one **MUST**—or we never can win the war.

As I am beginning to see it, Mr. Knoeppel, the fate of the nation, indeed the fate of all the world, hangs on the seventeen men who served me today; these seventeen, and seventeen hundred, seventeen thousand, seventeen million others like them.

These men must give way. They must be displaced or replaced. And those who are replaced must be, and will be replaced. by Women.

Men who are able and who have no dependents must **FIGHT**. Those of us who are less able or who have dependents must feed and clothe the fighters; and we must permit and encourage and **HELP** the women of the land to take up the tasks which they are anxious and ready to undertake, and for most of of which they are eminently fitted.

Yours very truly,

(Signed) R. C. WADSWORTH

Let us discuss this question of man power for a moment. In our jails are men who under guard could be put to work, either in industrial or agricultural pursuits. Elderly men who have retired, unless physically unable could perform work of a lighter character in shops and offices. There is still in this country, a greater degree of unemployment than is necessary and men who have nothing to do should be put to work. Tramps, street loafers and lounge lizards should be rounded up and put at productive occupations. Children from 12 to 16, both boys and girls, could be given something to do for part of their time each day. Workmen who take time off, because of high earnings, should be appealed to and kept busy, even if we have to resort to penalizing them for failure to report to work. Shifting of workers can be eliminated through joint action by the labor unions, manufacturers associations and the government. Men in clerical positions in office and shops, male waiters and elevator tenders, in hotels and clubs, pullman porters and conductors, taxi drivers and porters at the depots, and thousands of men in all walks of life whose work is not of a hard physical variety could be utilized to advantage in the army, in shops and on farms. We could take the cripples, and the blind and teach

them to be helpful—we have got to do it after the war—why not now? Then also there are several million of male and female enemy aliens who could be placed at some form of work, under guards. We can also arrange for a carefully worked out and properly executed plan of labor dilution, wherein a portion of the force in an efficient shop would be placed at the disposal of a less efficient plant. This by no means exhausts the list of places where men could be found, whose places or most of them, could be filled by women.

In short, my claim is that we should first use the women in the lighter occupations in order to utilize our man power properly and avoid exploiting women, or putting them at industrial work, before industry is ready for them, and my analysis indicates that industry is not ready for them as yet. By ready, I mean providing safeguards, proper training, careful selection and the like.

This leads me to the conclusion, that we need a policy, a plan of action, with the government behind it, and organized labor and the manufacturers of the country co-operating to the fullest. Mere argument and logical reasoning will not bring this about, but the experience of Great Britain with reference to women in industry, may be instrumental in focusing our attention on the methods to pursue in going about this task.

III.

The Experience of Great Britain

That it takes 61½ persons in shops, on farms, in mines and on railroads to maintain a soldier, is sufficient evidence that military success depends entirely upon industrial success, and that unless there is industrial efficiency, of the highest order in this war, our part in its winning will be both weak and ineffective.

As yet we have not struck our stride industrially. A great deal remains to be done to get both capital and labor to cooperate, not only with each other, but both with the government.

The greatest sacrifices that will be made in this war will be on the part of labor. Not only will the great army at the front be drafted mostly from the ranks of labor, but the labor that mans the factories at home and supplies the products of war, will be called on for sacrifice. Will it not require sacrifice on the part of labor to see their places taken by women, with the possibility that the pay for the work may be reduced on this account? Will it not require sacrifice to work at night, so that the women can work on the day shifts, and in some cases to work longer hours because due to the shortage of labor, it will be necessary, in order to keep the boys at the front supplied with munitions? Labor will be called on for sacrifices, and labor will make them willingly for its country's cause, but labor will not have sacrifices imposed on it by others.

We can well consider the lesson that England was forced to learn. When the war started, plans were made for the making of the necessary munitions with the depleted working force, by using the labor of women and by longer hours, overtime work, and by speeding up production which had previously been strictly limited by the rules of the powerful English labor unions. When the plans were completed and all that remained was

to tell labor what it had to do, what was the surprise and consternation caused when labor squashed all the nice plans, by simply sitting down and refusing to work under the conditions imposed. There was much talk on the lack of patriotism on the part of labor, though thousands of those who have laid down their lives for England were drawn from its ranks. Then the idea finally seeped in, that it would be very necessary to ask labor what it was willing to do, what it would please do, before making any more plans.

The seriousness of the situation is vividly shown by the speech of Lloyd-George, to the British workmen on December 25, 1915, in which he said:

"Either we must tell the soldiers that we are sorry that we cannot get the guns to enable them to win throughout 1916, owing to the trade-union regulations, or we must tell them that if they manage to hold out for another year perhaps American workmen will help us to get sufficient supply for 1917. I cannot return to Parliament and report through the House of Commons to the British Army that skilled workmen won't suspend their rules to save their fellow countrymen's lives on the battlefield."

The press of the world was quick to condemn the attitude of the British workmen, but while there was little that was commendable in their action, still it is probable that their attitude was largely due to the methods which were used in dealing with them, and which made them feel that the heaviest sacrifice of the war was being imposed upon them by those whose burden was light, without taking into consideration at all labor's own feelings in the matter. This conclusion is justified by the later action of labor, after it had been taken into the councils of the government, in which the workers made what was for them the supreme sacrifice for the cause of their country, in placing all their hard earned rights, privileges and restrictions on output, on the altar of the War God, and enabled the employers to dilute labor, to use women, install automatic machinery, that the men at the front might have shells, ammunition and other things needed in war.

How did England bring this about? It's a story in itself, but I will let Miss Frances A. Kellor place a concise description before you, as taken from her address "Industrial Americanization."

"Let us go for a moment to England, and see what she has built, and what an inspiring thing it is in its vision and power and justice and comprehension.

"First of all she defined munitions work to cover the manufacture and repair of everything intended, adapted or suitable for use in war, including even housing of workmen. The result is that she has little difficulty today defining non-essential and essential industries.

"A next important step was the suspension of trade customs; it is provided that any rule, practice or custom, which has not the sanction of the law, which tends to restrict production or employment is suspended, whether it is a general trade practice, a custom or a local shop rule. If there is controversy it goes to arbitration. Even matters of contract are

included. This means any man can work at any job, skilled or unskilled, that women can be employed and all shops are open shops.

"At the same time unions were protected. It is also provided that any departure during the war from any practice prevailing prior to the war shall be only for the period of war; that preference shall be given after the war to those employed prior to the war, that time and piece rates shall be maintained, that a record of departure from practices shall be kept.

"A very important action was the establishment of controlled industries. The minister of munitions has power to declare any establishment or part thereof adapted for use in war or suitable for war uses a controlled industry. In every such establishment the government takes all excess profits which are the net profits as they exceed by one-fifth the standard profits, which is the average for the two years preceding the war. If this is not satisfactory a separate agreement may be reached.

"At the same time wages were limited in such establishments and when an employee changes from one to another where the rate is lower he is given a bonus to cover the difference. Where he is away from home he is often allowed a sum for living and is given a reduced fare to go home holidays and week-ends. Workmen dismissed with less than a week's notice may receive compensation. Workmen idle for a period of more than two days when they have had no opportunity in the establishment to earn wages may receive compensation.

If workmen will agree to stay in such a controlled establishment for six months they are designated as munitions volunteers and get the standard rate of wages, and certain insignia of honor. They may be, however, penalized for violation.

"Employers are prohibited from soliciting by advertising or from inducing workmen in other industries to leave their work. As the certificate of leaving has been abolished there is no need to discuss it here.

"There are boards that handle the dilution of labor for each industry and the mixing of skilled and unskilled workers and of women is carefully done, the prevailing rates for the job being protected.

"Strikes and lockouts have been made practically impossible. All such controversies go to the Trade Board. If it fails to deal with them, they go to the arbitration boards. The law not only deals with all concerted action involving a stoppage of work, but it reaches the instigator of a strike by penalizing any person who attempts to impede, delay, or restrict production, repair or transport of war material or any other work necessary, for the successful prosecution of the war. The award of the Arbitration Board is final.

"Certain specified industries are protected in calling out men for the front.

"A complete system of labor exchanges (nearly 400) is in operation. Each one has a board which deals with the problems as they arise and acting in an advisory capacity. There are no competing private agencies, and local boards are well informed of local needs and these exchanges control the field.

"With the building of this structure, England has found time to make studies of fatigue, to protect women, to put government agents in plants to look after the conservation of man-power, to have billeting committees to find lodging for workers, to conduct industrial canteens and to do countless other things for workers."

What has been the result? An industrial efficiency in Great Britain undreamed of by the most radical efficiency crank and which has been one of the most important factors in enabling that nation to play such an important part in the conduct of the war so far. Great Britain has out Germaned, German efficiency.

Let us consider for a few moments some of the experiences out of the English books, especially with reference to women labor. In a country having less than 50,000,000 population, there are, according to Helen Fraser

- 1,250,000 women in industry replacing men
- 1,000,000 women in munitions making
- 80,000 women in government departments
- 250,000 women on farms
- 10,000 women per month joining the women's Army Auxiliary Corps.
- 60,600 women in volunteer Red Cross Work.

It takes from 6 to 8 weeks to make the average English woman fit for the simpler operations on shells, shellparts and fuses, while the more intelligent in this line becomes lathe hands and tool setters. The British Government has established 50 training schools since the war and thousands of women are being schooled in industrial activities. In addition most of the large plants have training classes of their own.

The great Gwynnes, Ltd. works employ a large number of women and in describing what they do in the manufacture of aeroplanes, I. William Chubb, in "American Machinist" says:

"In certain factories there are about 1800 employees, of whom 700 are women. The women enter and leave at the same time as the men, a one-break day being worked, with a quarter of an hour rest in each shift, giving an opportunity in the afternoon for the tea interval which has generally been found so valuable in connection with the employment of women in England. As to pay, the piece rates for men and women are alike, and put generally, the women are not segregated, but take their places in the shops beside the men and are permitted to undertake any operation for which they are found capable. As timekeeper they are at least equal to the males. Rest rooms are of course provided, and, somewhat unusually, the men and women use the same eating rooms.

"The works are run strictly according to a planning system, and progress girls are employed in the shops. At one works the stores are kept successfully and completely by women; they even become head storekeepers.

"In erecting, stripping down and re-erecting the engines a woman is in each gang, the proportion in the erecting shop being one woman to two men. In the carburizing section the plating is done by women, but here a man is in charge. Similarly in the heat-treatment department, while a

man is in charge, women are employed on the smaller pieces for such work as reheating, plunging, etc. Women, too, are engaged for inspection purposes.

"For machining and other operations the women are actually trained in the shops, standing by and watching the operation of machines, etc. This is preferred to the instruction of women in schools, even when the school is in the works, as the women thus quickly become accustomed to the general shop atmosphere and conditions; and in particular they are found to appreciate more readily the value and need for care in the use of precision tools, gauges, etc., an advantage which the semi-skilled laborer often lacks. As is fairly common, the women are found quick in learning one particular operation, perhaps more so than men; but they do not change readily from one operation to another. In short, it is not usually found commercially expedient to attempt to shift them.

"Setting up is commonly done by men, with few exceptions. The factory is run almost throughout with single-operation machines even the ordinary lathe being so used. The product of the automatic has not been found sufficiently accurate to pass the official inspection."

In England women are receiving honors for deeds of their own—as, for instance—

Martha Branhall—For courage in remaining continuously at a very dangerous task, in spite of the occurrence of several explosions.

Edna Goodenough—For continuing to work after suffering serious injuries from an explosion resulting in the loss of the right eye.

Nora Morphet—For courage and high example in continuously working long hours in a poisonous atmosphere, which habitually affected her health.

Agnes Mary Peters—For great courage and high example in continuing to do work of an exceptionally dangerous nature, which finally resulted in an accident by which she was made totally blind and otherwise injured.

It is said that King Edward and Queen Mary once made a tour of the munition factories, and in one of the danger zones the King asked a girl whose face was seamed with scars if she had had an accident. She replied that she had been blown up three times. The King told her that she was a plucky girl and her reply was that she had a brother "over there."

As regards the ability of the women workers, note the following from the "New York Sun" of March 9th.

"British women have clearly demonstrated their superiority over men in the manufacture of gun shells. Sixty-one per cent of all the shell makers in Great Britain are women and this dilution of labor is continuing rapidly, it was stated officially here today. It is found that the greater the percentage of women the greater the output.

"The forthcoming monthly bulletin of the Bureau of Labor Statistics shows that in a ten-hour day women are able to turn out twenty-four nine-inch shells, whereas ten or eleven is the average for men."

In England it was found that a great deal of the work in connection with the army behind the men at the front, was carried on by men, such as keeping books, clerical work, developing and printing photographs, tele-

phone work, telegraphing, sorting mail, forwarding packages and many other civilian tasks which an army has to carry on.

The English organized a Women's League for National Service, asking that the Government turn over to them some of the civilian work at that time performed by soldiers.

Today there are thousands of women cooking for the men in the army camps.

All over France you find women dressed in khaki and soft hats, wearing the insignia "W. A. A. C." for the Women's Army Auxiliary Corps, the "Waacs" as they are called and the work of this wonderful organization, now a part of the War Office and a branch of the army, rivals that of the Red Cross.

Rhetta Childe Dorr, writing in the New York Evening Mail of this organization, said—"The first day I visited Devonshire House, the draft for France, which I was assured was average, called for—

29 clerks

10 cooks

10 waitresses

1 motor car driver

2 telegraph operators.

"All were promptly supplied, as a matter of course, and a few hours later the women, saluting smartly, left for France, packs on backs, exactly like soldiers. This remarkable organization was recruited by the Government at the rate of 10,000 a month, the plan being to mobilize 250,000 women to release the men for fighting.

"It is expected that when the Women's Army Auxiliary Corps is recruited to full strength it will have released more than ten army divisions for the actual work of fighting. Women are wanted as printers, binders and folders in military print shops; as grooms and assistants in military veterinary stations; as gardeners, shoemakers, packers, checkers, messengers, sewers, bakers, and as forewomen for all sorts of workers. Women are even doing acetylene welding, think of it, you men who know what welding is."

In appendix B you will find a list of the work being done by women in the various British Industries while in appendix D you will have an opportunity to review the steps taken to protect and safeguard labor that it might operate at maximum efficiency, I can promise you reading both profitable and interesting.

IV.

Our Experience to Date.

My studies of the labor situation indicate:

1. That we are passing through the same experience that Great Britain passed through during the first year of the war.
2. That we have no well defined plan or program with reference to either male or female labor.
3. That there has not been the proper three-sided co-operation between employer, employee and the Government.

We have had strikes, "Colliers" stating that 64 typical strikes meant a loss of 1,795,900 working days, equivalent to an army of 60,000 men on strike for 30 days.

We still have competition between manufacturers for workers. About this Mr. Hurley of the Shipping Board said:

"We sent two tourist sleeping cars loaded with men for the Western Shipyards a short while ago, and we were asked to give them priority to get them out there. And these eastern Shipyards went out there and employed riveters away from those very yards on the Pacific Coast."

We have had to resort to a national campaign of advertising to get shipworkers. We put enemy aliens outside of prescribed zones, without creating any efficient machinery for putting them in productive occupation. We have withdrawn men from industry by the thousands without any real program for replacing them. There are state and city employment bureaus; trade union and manufacturers association employment bureaus, and in addition, about 5000 private employment agencies. Employers say they cannot get help and must resort to women labor. Organized labor replies that there is no shortage of labor.

I am not saying the above in a spirit of criticism. In the hard work we have put in this investigation we have had but one thing in mind—*constructiveness*. It is well to know the true situation, however, that we may fully appreciate the problems confronting us and effect a solution. This we must do if we are to win the war, and the winning of the war is not a debatable subject.

The Council of National Defense has a Woman's Committee, of which Dr. Anna Howard Shaw is Chairman. Under this Committee is a "Department of Women in Industry," of which Mrs. James A. Field is Executive Chairman. The Department of Labor has a Woman's Division of which Hilda Muhlhauser Richards is Chief. The Ordnance Department has a Woman's Division of which Mary Van Kleeck is in charge. Secretary of Labor recently appointed an Advisory Council made up of representatives of both capital and labor, with Agnes Nestor of Chicago as the representative of women.

Let us consider for a moment what these various bodies are to do. In a letter we received dated March 9th, Mrs. James A. Field, Executive Chairman of the "Department of Women in Industry," of the Council of National Defense, says:

"The work of the Woman's Committee in reference to women in industry is centered in their Department of Women in Industry. The aim of the Woman's Committee in all its work is to co-ordinate the activities of the women of the country and serve as a channel of communication between them and the Government. The Department of Women in Industry tries to accomplish this in its particular field through State Departments of Women in Industry which have been established in every state as part of the Woman's Committee of each state. These departments are headed by women who have had some experience or in some way are especially qualified to handle problems of women in industry with reference to the public and to other organizations of women. Work of the departments has so far confined itself mainly to assisting in the maintenance of standards for

working women; to informing the public what standards should be; and in some instances to making surveys or investigations of women's work. This latter function we expect now will be largely taken over by the Women in Industry Service which is to be established in the new War Labor Administration. There will, however, still be much that the state departments can do—especially in the field of maintaining standards.”

The Women's Division of the Department of Labor is to cover the following, as outlined by Secretary of Labor Wilson.

1. “A means of furnishing an adequate and stable supply of labor to war industries.
2. Machinery which will provide for the immediate and equitable adjustment of disputes in accordance with principles to be agreed upon between labor and capital and without stoppage of work.
3. Machinery for safeguarding conditions of labor in the production of war essentials.
4. Machinery for safeguarding conditions of living.
5. Fact gathering body to assemble and present data for effective executive action.
6. Information and education division to develop sound public sentiment and exchange of information between departments of labor administration.”

The work of the Woman's Division of the Ordnance Department is best expressed by Mary Van Kleeck, in the New York Post, as follows:

“The Women's Division of the Ordnance Department is an integral part of the Industrial Service Section, guided by the same policies, and working with and through the other divisions. It will have its specialists in employment management, in housing as it affects women workers, and in adjustments, and these will work with the corresponding divisions of the Industrial Service Section. It will have an important branch on the health of women workers. Its field work will be handled through district supervisors assigned to the large munitions areas where women are employed. These supervisors will be stationed in the local offices of the production division of the Ordnance Department.”

The work to be covered by the War Labor Administration of which Agnes Nestor represents women is—

“1. A means of furnishing an adequate and stable supply of labor to war industries to include:

- (a) A satisfactory system of labor exchanges.
- (b) A satisfactory method and administration of training of workers.
- (c) An agency for determining priorities of labor demand.
- (d) Agencies for dilution of skilled labor as and when needed.

2. Machinery which will provide for the immediate and equitable adjustment of disputes in accordance with principles to be agreed upon between labor and capital and without stoppage of work: Such machinery would deal with demands concerning wages, hours, shop conditions, etc.

3. Machinery for safeguarding conditions of labor in the production of war essentials. This to include industrial hygiene, safety, women and child labor, etc.

4. Machinery for safeguarding conditions of living, including housing, transportation, etc.

5. A fact-gathering body to assemble and present data, collected through various existing government agencies or by independent research, to furnish the information necessary for effective action.

6. Information and education division, which has the functions of developing sound public sentiment, securing an exchange of information between departments of labor administration, and promotion in industrial plants of local machinery helpful in carrying out the national labor program."

If this War Labor Administration recently appointed is to be the clearing house for all matters pertaining to labor problems and to women in industry; if it can plan and coordinate the work of other sections; if it has authority to get results instead of being another advisory body, I can see great things ahead, as our replies to the questionnaire clearly indicated, that manufacturers were not acting in a concerted manner nor along well planned lines. One manufacturer wrote in and dismissed the entire subject by advising that we import 5,000,000 Chinamen. Needless to say his letter received scant consideration. On the other hand, R. H. Sotherland, of the Mansfield Tire and Rubber Co., Mansfield, Ohio, had this to say:

"Real American men have always placed the women of their country on a pedestal, as examples of refinement and culture, protecting them against the ravages wrought by extraordinary manual labor, which was a part of the original American woman, the squaw of the Great American Indian. Are we going to step back a decade in our boasted civilization and place the woman of America on a par with the peasantry of Germany, Austria-Hungary and numerous other foreign countries, in a way that it will develop for the future the heavy ox-eyed beast of burden so common in foreign countries and becoming common on the streets of American cities through our weak immigration laws? Is it not enough to ask the women of America to bear children and suffer the pangs of maternity and rear their offspring to the actualities of life that each one must face and prepare their boys to be real men."

L. H. Colburn, general manager of the Colburn Machine Tool Company, after reading our questionnaire, wrote to "Industrial Management" as follows:

"In the writer's opinion, based on recent experience, the principal difficulty in employing women is the attitude of the labor unions. To illustrate: The Colburn Machine Tool Company has a large and splendidly equipped plant located in a small city where the living conditions are of the best. There is plenty of sunshine, good air, beautiful surroundings such as trees, grass and flower beds, in fact everything to make working conditions pleasant. We work eight hours a day, pay time-and-one-half for overtime and double time for Sunday work.

"We pay the highest wages to machinists and other labor, but in spite of this we have been greatly handicapped on account of not being able to get sufficient help. We are now and have been "full up" for about three years with important war business.

"We exhausted all our efforts to get additional men; we advertised in the newspapers for hundreds of miles around; we sent employment agents

to the large cities, we offered our workmen bonuses for getting additional men—but all to little purpose. Finally, last July we decided to start to employ women in some of the departments of our plant. We had never employed women in the shop before, but made a careful investigation first and went around to plants in other cities where they were employing women successfully and got ideas on the subject.

"We decided that we could use about 50 women on our work, putting them on small machines, light bench work, fitting, etc. We made inquiries and found that we could get all the women we wanted, in fact, they welcomed the idea because, for one thing, we resolved from the start that we would pay them just as much as we paid men for the same work.

"About that time we commenced to hear rumors of objections on the part of our men employees belonging to the machinists union, and finally we were notified that a committee representing them wanted to see us. We received the committee and found that they were unalterably opposed to our employing women in the shop in any capacity. They were afraid that the women if once admitted would, after the war, keep the places which they claimed rightfully belonged to men. No amount of arguing would change them in their stand.

"Rather than have any trouble we gave up the idea of employing women for the present."

Frank Morrison, Secretary of the American Federation of Labor, does not believe that there is a shortage of labor. In a letter to me he said:

"Your very first question 'How are we going to find the immense army of women needed' opens up a wide field for discussion that could not be answered in a few words. In what field are women needed? Should they be placed on street cars, lumber mills, machine shops and on the railroads?

"This question might also convey the impression that there is a labor shortage, which is agreed to by labor conscriptionists, women exploiters and advocates of Oriental Labor. The trade union movement dissents from this assumption and insists that labor mobilization will remedy a condition that is charged as 'a shortage of labor.'"

Peter J. Brady, President, New York State Allied Printing Trades Council, in an article "Women's War Work and Men," which appeared in the New York "Evening Post," has this to say:

"There has been much publicity during the past few months to the effect that owing to the requirements of men for the war there is a scarcity of labor, and therefore women are urged to fill these vacancies. This is an absolute falsehood, brazenly stated with deliberate intention to deceive the public and defraud the unfortunate women. There are probably more people out of employment now than at any time during the past two years."

In a letter to organized labor under date of January 1st, Samuel Gompers says:

"War means victory for our cause or danger to the very existence of our nation. With our nation at stake, individuals cannot interpose objections to the war—a war declared by the will of the nation's representatives." To this everyone will heartily subscribe. But further on in his letter he says:

"While this is true, there is even more than ordinary need for the maintenance of the rights of men and women, and for careful scrutiny and the fullest discussion of policies and methods before their adoption.

"The time for labor to interpose its needs and contentions is while policies are in the making."

To this we only partially subscribe. I agree fully with President Wilson and Secretary Baker, that we must protect and safeguard our workers, especially our women and children. I go on record by saying that we do not need women in industry now, if present man power can be made more efficient and we can recruit men from the lighter occupations. I go on record by also saying that in all discussions of plans and policies governing labor during war times, labor should be represented.

But this is no time for a debate of labor rights or the rights of capital, nor is it a time for a discussion of your rights or my rights. The question squarely before the country, which we—100,000,000 of us—must answer NOW is—*will we be free people or a vassal people?* If I have an aching tooth and a blood poisoned arm to the shoulder, no discussion is necessary as regards what to do first. I want to see labor have a greater industrial liberty, more say in the conduct of business and greater earnings than ever before, but first I want to see this war won, *and not by Germany*, in which event the rights of all of us would be taken care of by that philosophy called *German Kultur*.

There have, of course, been abuses of the opportunity to utilize women labor, as indicated by the following statement by Miss Pauline Goldmark concerning an investigation she made of a factory in Zanesville, Ohio:

"The majority of women at this plant are engaged at hard labor such as loading scrap iron, sorting scrap iron, wheeling iron castings in wheelbarrows, etc. The women loading scrap, and sorting the same, work out in the yards, with no protection from the intense rays of the sun or weather. These women wear overalls and large brim hats. They hand the iron up from the ground to others in the cars, who pile it. The hours are nine hours a day, fifty-four hours a week, and one-half hour for luncheon, wages 20 cents an hour and \$1.50 deducted each month for relief purposes. Men are given 21 cents an hour for labor of the same class."

A woman conductor in the car lines in New York City has this to say regarding her experiences:

"As to what the work is like. It's no work for any girl. It's a man's job. I don't mean because of the actual work. It's the conditions, the life, the hours, and the days. To be exact, I work from one o'clock in the afternoon until 3:35, and from 7:19 in the evening until 2:29 in the morning. This doesn't sound bad, but what really happens is this: I get up at 11 o'clock in the morning and have breakfast. I say, 'Goodbye m'm, see you 16 hours later!' Then I may work until 3:30 o'clock, but more likely, like tonight, I will work until nearly six with no more food. You must work overtime or be suspended. A girl was suspended yesterday because she has two children and had to be home, so she refused to work two hours overtime.

"What time I have before 7:19, when I go on again, I stay at the barn in the rest-room, sewing or knitting. I get dinner there for 25 cents. You can imagine what the dinner is like for that, but we don't like to go out

in our uniforms, so we just eat it there. The rest-room is no fit place to spend your free time, not a clean place,—basins, toilets, garbage cans—a few benches. But what else can you do? You can't make an engagement, for you never know when you will have to do overtime. Only yesterday I hung around four hours between my regular runs and refused to go out with a girl. When I reported I was told I had no motorman and to go home. Of course, I was not paid for the time I lost. Then today I made a date, and had to work overtime."

A labor paper "The American Federalist" is much concerned over the possibility of an uncontrolled use of women labor. It says:

"In Cleveland between 75 and 100 women are running Bradley hammers in one shop. Women are wiping engines in the round house at Akron, Ohio; many are running engines in the machine shop and doing other laborious work around large manufacturing plants. One woman has been employed by the Baltimore & Ohio railroad as a shop hand; she packs journal boxes, which are on the axles of wheels and must be filled with waste and oil. Flag women have appeared on railroads. Women are employed in the foundry trade, in machine shops and munition plants. One lumberyard in Chicago is reported to be employing women to handle lumber. Truly there can be no justification for employing women with so little discrimination. We cannot disguise the fact that during the progress of the war women may be employed in constantly increasing numbers, but surely our nation has enough intelligence to see that women are not employed in handling Bradley hammers and doing the roughest sort of manual labor for which they are physically unfit."

On the other hand there are some bright examples of the successful use of woman labor as will be found in the experiences contained in Appendix E. These however are more or less isolated cases and the propositions were worked out by the concerns themselves rather than being the result of a comprehensive labor program.

It was because we felt that women labor in industry was not needed now; it was because of conditions such as above described; it was because we do have both radical labor leaders and autocratic manufacturers; it was because some plan and policy should be developed, that we decided to make this survey that we might assist in a small way in the proper utilization of both man power and our woman power.

V.

Report Covering Analysis of Questionnaire.

With a long war confronting us, calling for our utmost efforts to win it, it is apparent that we will have to call upon women in increasing numbers. It is further evident as one studies the subject, that we do not need women in industry to any great extent, at this time, but what we do is **a plan for properly handling the proposition, when the need for women in industrial plants becomes pressing.**

In other words, we must first use our man power to the fullest and as efficiently as possible; then take men from the lighter occupations, substituting women, and then call upon the women for industrial work, during

all of which time we should be so shaping things, that women may be able to work to best advantage when the call comes.

One principle which should be given consideration in the matter of using women is as follows:

Most of the women who will go into industry are the future mothers of the race and the wives of our sons and must not be exploited.

Another which must be adhered to in safeguarding our women is:

There must be no charity about what is done nor must the attitude towards them be one of patronizing.

With these in mind, we can proceed to the matter of our questionnaire. As you may recall, the questions which first appeared in "100 per cent" for December last, were as follows:

1. How are we going to find the immense army of women needed?
2. What basis shall we use for selecting women for industrial work?
3. What efforts shall we make to provide clean, wholesome living conditions?
4. What changes will we have to make to provide proper working conditions?
5. What social conditions will we have to provide?
6. What hours should women work and how about rest periods, fatigue and the like?
7. How will we arrange to subdivide and arrange the operations so that women can efficiently perform them?
8. How will we train women and who will do it?
9. What steps will be necessary to induce the full co-operation of
 - a—labor unions?
 - b—organizations of women?
 - c—our government?
10. What steps should be taken to change and unify the state laws with reference to woman labor?
11. How shall we adjust and arrange the wages of women?
12. What will we do with reference to woman labor after the war?

In other words, these questions had to do with location, selection and training of women; conditions— working, living and social; the work to be done by women; hours, fatigue and wages; existing laws; co-operation of the labor unions, women's organizations and the government and the Post-Bellum factor, all of which are essential considerations in any intelligent presentation of the subject.

The questionnaire attracted no little attention and we understand that it will be a subject for discussion at the next meeting of the Industrial Betterment Committee, of the National Association of Manufacturers. A great many requests have already been made for the conclusions, including government officials interested in the subject.

The answers were both a revelation and a disappointment. A revelation, in that the general trend was altruistic, big-minded, clean and thoroughly American, showing conclusively that organized labor has nothing

to fear from the manufacturing world on this question of women in industry. A disappointment, in that there was evidence of lack of plan, no co-ordinated action and lack of co-operation, so necessary in the successful use of women in our factories.

To place the results of this investigation before you in the most logical order, it was decided to re-arrange the subjects as follows:

A—The Work to be Performed by Women.

B—Find the Women.

C—Selection of Women.

D—Training Women.

E—Wages, Hours and Fatigue.

F—Working Conditions.

G—Living and Social Conditions.

H—State Laws.

I—Co-operation of—

1—Labor Unions.

2—Women's Organizations.

3—Government.

J—Post-Bellum Consideration.

Let us now consider each in their order—

A—The Work to be Performed by Women.

It was clearly evident from the answers received that manufacturers had no well-defined views as regards what work women should be called upon to do, nor where they would put them if necessity forced them to employ women. It was apparent, however, that this was the first point of attack, for how could we look for a person to do something which had not been defined or outlined as a task to be performed? We could not say—"here is a job, let's find a woman to do it."

A study of the answers did disclose, however, the essentials to consider, which, if placed together and co-ordinated would furnish a plan of action.

As regards work to be done by women, a few felt that it would be unnecessary to subdivide operations, first because women had proven themselves more efficient than men, and second, because proper training and supervision would be all that would be necessary to secure productiveness from women.

The consensus of opinion, however, was that work should be studied with the view to subdivision, in order that women might perform the lighter and less complex tasks and men the heavier and more complicated work—in other words, to determine the class of work in each shop or industry that women could both safely and efficiently perform.

To do this quickly and profitably, it was suggested that a Planning Department be organized in each plant, which could make scientific operation studies of the different kinds of work or operations, and in conjunction with the Superintendent and Department Heads, classify the work women could do.

As an excellent cooperative measure, it was also suggested that use be made of district Factory Inspectors or women physicians, or both, in determining what women could do, or better yet, *what they could not do.*

As part of the program, it was felt that the mechanical phases of factory work should receive careful attention—hoists and conveyers to be utilized to eliminate unnecessary lifting and handling; development of mechanical devices—jigs, tools and fixtures,—looking towards making work simpler and easier to do; development of single purpose machines, both semi-automatic and automatic. In connection it was suggested that investigations should be made of laborious operations performed by men, with the view to developing labor saving tools, and then use female labor.

It was also thought that insofar as might be practical, machinery should be rearranged so women could be worked in groups. Further, women should be given different things to do during the day, to avoid over-specialization and to relieve the monotony which inevitably follows, when a person does the same thing day in and day out.

Men should set up work excepting in cases where rigging machinery is a comparatively simple and easy task. It was felt that a safe rule to follow in determining what women could do, would be—

a—Experienced men for difficult and complicated work.

b—Laborers for heavy manual work.

c—Women for light, simple or semi-complicated operations with men setting up the work.

For instance, one field where women could work to advantage would be tool making, a line of work which calls for the very qualifications women possess—neatness, accuracy, precision, dexterity and quickness.

In other words, an analysis of work, based on a consideration of the above fundamentals, would very quickly in each department, plant and industry, determine what women could and could not do.

A list of permissible operations for women could then be worked up, by the government or under government direction, and industry generally advised as to the field for women, along the lines followed in England.

Appendix B will give a clear outline of the work women can do in England outside of strictly munitions work, which is covered to some extent in Appendix D.

B—Finding the Women.

After determining the nature of work in industry, which women can perform with safety to their health and strength, the task becomes one of finding the women who are fitted to take up industrial occupations. Where are we to find them? How are we to induce their consent to enter the factories?

Analysis of the answers to the questions revealed that there were a number of avenues of approach. In the first place a great many felt that as we become more and more organized for war, the non-essential industries, wherein women were employed, could contribute not a little to the supply of female labor, but whether or not this will lead to much, depends to a large extent on what the non-essential industries are and what the government's attitude is likely to be towards this great question of "business as usual."

Unquestionably, a great many women could be recruited from the ranks of those known as household servants, for in this crisis we could

do very easily without servants. Then there are the childless married women, who could serve all of their time, and the married women whose families have grown up and who could serve for part of their time. In the so-called idle and leisure class, many women could be found to assist as well as many unemployed women who would like to work.

There is also the large number of wives and sisters of soldiers who have gone to camps or to the front. A large number of women from the rural districts, not directly engaged in agricultural pursuits, could also be recruited. We are using colored men, why not colored women under a colored matron? Then there are many weathy girls whose patriotism could be appealed to. By far, the largest number could be drawn from the families and friends of those already employed in factories. At any rate a review indicates that there would be plenty of women to draw from if they are needed.

The next point is how to induce them to enter industry. The consensus of opinion was that if wages for women are to be the same as paid men for the same work; if conditions are made both attractive and such that women can work without injury to their health, there would be no question about getting them to respond, should an appeal be generally made for women.

It was felt that appeals could be made through—

Women's organizations

Schools

Y. W. C. A.

Epworth Leagues

Catholic Societies

Churches

Factory Bulletins

Moving pictures, showing women at industrial work

Industrial exhibits showing through women, how factory work is done and what is made, women to be admitted free.

Departments of Labor—state and national.

Associations of Manufacturers.

Editorial support by newspapers and magazines.

Advertising, like the appeals to shipworkers and ordnance workers

Magazine and newspaper articles

Public lectures

Campaigns putting before the women of America, what the women of England have done.

It was felt by several that the basis of the appeal should be to so place the matter before women, as to insure against their losing caste by going into the shops, that it would not be degrading work but big, patriotic, and a real help in this crisis.

A number thought that women could be recruited the same as men are employed, through making it known that women were wanted and engaging the best of those who applied for work.

It was felt by many that the Government, through the States, should

take the work in hand; make a census or house to house canvass and recruit in this manner, and if the case gets really critical, to exercise the right of selective draft, for both men and women for industrial work.

Still others were of the opinion that through women employment managers and the employment exchanges throughout the country, plenty of women could be located and induced to apply for work. One very good suggestion was to have the Government work through the National Chamber of Commerce, wherein labor, women and the manufacturers would have representation. Another suggestion was that a campaign like that of the Red Cross could be instituted and secure sufficient women workers for industry.

C—Selection of Women Workers.

Knowing the work that women can do in industry and having worked out plans for inducing women to apply for work, the next step is that of selection. This question seems easy of solution according to the answers received—simply match qualifications against requirements. In other words, the task is one of determining character of work and select type of women who can do it, or to put it another way, find the women who can work and then train them.

Several suggest both physical and mental examinations with tests for deftness, strain, fatigue and skill.

Among the qualifications which should be considered, as taken from the answers are—

- Age
- Adaptability
- Past experience
- Type
- Nationality
- Education
- Physique
- Health
- Intelligence
- Strength
- Moral character
- Looks
- Cleanliness
- Social standing
- General aptitude

One suggested that women be tried at different tasks before determining what they might best be suited for; another that a list of the various kinds of work should be posted, showing the women the nature of the same as it is done in the shops, and let them select the kind they feel they are best fitted for. L

Several felt that it was a matter to handle through women employment managers and women supervisors, the same as men, only much more carefully. It was also felt that after employment, close supervision for from four to six weeks should be made to see to it that requirements and qualifications did match.

One very excellent idea was that women should be classified by local boards, not only with reference to physical and mental fitness, but home demands as well, and that employers should requisition these boards, on approved forms, stating kind of work, location of plant, conveniences for female labor, housing conditions and other important factors affecting women workers.

It was felt by several that teachers should not be used in industry, unless absolutely necessary, as this would have a detrimental effect in educational work. It is further thought that some distinction should be made as between the family woman, the business woman and the scientific woman.

In many cases women could take up the same work as their fathers, brothers and husbands, because of the ability of the men to assist and instruct the women in mastering the various phases of the work they are familiar with.

D—Training the Women.

Many of the women who apply for industrial work will be totally unfamiliar with factory work or the operation and handling of machinery, so that the matter of training becomes doubly important.

It will be necessary to organize a system of competent instruction, if the change to women employees is to be made rapidly and efficiently, and the heavy loss in production, while they are learning, is to be reduced to a minimum. To be prepared, the preliminary work toward organizing a crew of instructors should be started as soon as it is decided to use women workers.

The instructors to be used should be selected from the fastest workers in the organization. The mistake, however, should not be made of thinking that any fast operator will make a good instructor. There are many people who are able to do things who cannot impart their knowledge to others, or explain logically how they accomplish their results; consequently they are useless as instructors.

The work of the instructors selected should now be carefully studied, with a stop watch if necessary, and the fastest method of performing the operations should be determined, and the method should be taught to all instructors.

When women are hired they should be immediately turned over to an instructor and the instructor should stay with them until they are performing the operation exactly as taught. The instructor may then leave, but should return at frequent intervals to watch the progress made. In no case should new employees be only partially instructed or allowed to choose their own way, for once workers have learned to do things the wrong way at a fair speed, it is doubly hard to make them give that way up and teach them the right way.

Instructors should be selected for their ability to explain things clearly; for pleasing personality, tact, patience, sympathy and consideration for the rights of others; for ability at performing the tasks they are to teach, and wherever possible unusually masculine men should not be put in charge of instructing women.

One suggestion was that instructors be recruited from the women of a community, who have shown executive ability, and train them to in turn train others. Another good plan would be to let women work part time as a step toward training women who could be used as forewomen. Instructions should be given first by men, then by the women who become most proficient.

In connection with the general plan of instruction, industrial training schools should be provided, either as a community proposition, using the high schools and the colleges, or by the plants themselves, in fact it would be well to co-operate in either case with the local educational systems. Apprenticeship classes can also be formed or small squads of women can be put in the hands of expert mechanics.

As studies of operations were the first step recommended in determining what work women could do, they can again be used for purposes of training to excellent advantage.

One skilled woman to every ten women should be used to act as supervisor in helping women while undergoing training. Another suggestion was to take care of the matter of industrial training of women workers through co-operation with the Y. M. C. A. and the Y. W. C. A.

E—Wages, Hours and Fatigue.

The matter of wages, hours of work and consideration of fatigue, is most important in connection with utilization of woman labor. It can well be said that the success or failure of the movement depends to a great extent upon what we do with reference to these things.

The answers with reference to wages narrowed down to the following:

1—Determine standards, and pay according to performance.

2—Piece work, with minimum wage guaranteed.

3—Weekly wage for a time, then piece work.

The principle "equal pay with men for equal work" was subscribed to by practically all who answered the questions. One replied "Leave it to the women," feeling that they were amply able to take care of themselves.

Several felt that earnings in advance of those paid men should be offered to attract women workers and secure interest and co-operation, as for instance have a minimum wage which exceeds the amount provided by state laws, or pay the women 10 per cent more than men receive.

Some were of the opinion that while women should receive the same as men if they produce the same, they should receive less if they do not produce as much, but ~~more~~ if they can exceed the production made by the men.

All through the answers, it was plain to be seen that the feeling was—*No exploitation of women*—and one went so far as to urge that the Government take steps to prevent any possible exploitation in the unorganized industries.

Our review indicates quite clearly that organized labor has nothing to fear from the manufacturing world as regards women in industry.

In analyzing the questions as to hours, rest and fatigue, the conclusions were—

- 1—No night work
- 3—No Sunday work
- 2—No overtime
- 4—Half Saturdays off
- 5—An 8 hour day, some urging a 54 hour week.
- 6—A rest period in the morning and in the afternoon, in addition to the lunch period, and varying from 10 to 20 minutes.
- 7—Experiments to determine rest periods and fatigue factors in work of a very fatiguing nature.

It was also felt that nurses or matrons should be employed to observe the conditions of women; look for signs of strain, nerve tension and fatigue, in order that women may operate at maximum efficiency in a physical way. Several suggested that arrangements be made to have female physicians assist in this important matter.

The question of the health of the woman worker is of vital importance, and too much emphasis cannot be put upon it.

No applicants should be hired who have contagious or infectious diseases. The examination of the eyes is frequently neglected and yet there is no trouble so common or so frequently neglected by the person hired, as defective eyesight. In most cases the trouble can be quickly and easily remedied. While knowing that this matter is usually neglected, we must confess to having been somewhat surprised on finding in a plant making optical goods, that no attention was paid to the eyes and that in the assembly of eyeglasses there were girls who were so near-sighted that they had to bend close to their work in order to see the fine parts they were assembling. No attempt had been made to fit these girls with glasses.

The teeth are now recognized as one of the most common causes of human ailments, due to the frequency with which they generate pus and feed it to the body, poisoning the whole system. Not only are acute troubles, such as rheumatism and kindred ailments, frequently due to the teeth but many of the long lasting diseases that keep people below par and interfere with their efficiency are also due to them.

Not only should applicants for employment be required to take a physical examination but employees should be periodically examined. Prompt medical attention in case of even minor injuries and in case of sickness is so valuable that considerable reductions in insurance can be obtained when a medical staff is maintained in a plant and some insurance companies will even go so far as to maintain their own doctors in a plant, on account of the reduction in liabilities thus obtained. Prompt attention to a scratch frequently prevents blood poisoning.

If a plant is not of a size that warrants retaining a doctor and dentist permanently, arrangements can be made with local practitioners to handle all plant cases or else several concerns can associate and retain one medical and dental staff. However, in this case employees will require additional time for medical attention and will lose that much more production.

It is not necessary for the plant doctors or dentists to treat patients, they can merely examine and diagnose, and the employees can then consult their own doctors. But care should be taken that they select reliable

practitioners, although in case of prolonged sickness they should be visited from time to time by the company doctor.

Employers and employees should get together on the important matter of wages, hours of fatigue and work out definite rules and procedure. Much that was done in Great Britain will be found helpful and appendix D will be found of value in connection.

F—Working Conditions

Another very important factor in connection with the utilization of woman labor is the matter of the conditions under which they work. Select the best of women, pay the best of wages, if working conditions are not right, the result is bound to be both discontent and dissatisfaction.

The shop is a second home, in which many hours are spent each day and if this thought is made the basis for improvement in working conditions, there will be a much better relationship between the workers and the employers.

All workrooms should be generously lighted, which helps the speed and accuracy of work. It would require a study of particular conditions to recommend the changes necessary for correct lighting, but it will be found that a generous use of white paint on walls and ceilings and even on machine bases, will accomplish wonders in improving the light, and next to this clean windows are a great help. In regard to artificial lighting, in rooms with white ceilings, the indirect or semi-indirect method of lighting is superior as it is easier on the eyes and no shadows are cast.

In regard to ventilation, you will find languor, headache, and a disinclination to work where the air is allowed to get stale. Fresh air should be admitted and bad air removed from rooms in such manner as not to create drafts. Any ventilating system that accomplishes this will be satisfactory.

Temperatures of rooms should be kept constant. The best temperature to maintain varies in accordance with the strenuousness of the labor performed in the room. With a little study of conditions the most satisfactory temperature can be determined, and there are any number of devices made which will automatically keep the room at the temperature desired.

The question of the position at work is especially important for women as their health and efficiency are largely dependent upon it. Wherever possible their work should be arranged so that they may be seated, and the chair or stool designed so that they will sit in an erect position. Where their labor requires that they stand a large part of the time, high-stools can be designed on which they may rest in a semi-sitting, semi-standing position. Special attention should be given to arranging their work about them so that everything needed is within easy reach. This not only adds to comfort but greatly speeds up the performance of the operation.

Labor saving devices should be installed wherever possible, to eliminate lifting and handling by women. Men should of course do the heavier work. Safety appliances should be given the most careful attention and rigid "safety first" rules determined and as rigidly maintained.

Women should first start on the lighter tasks and as they become proficient can take up heavier work, if physically able to do so—a matter to be left to the matrons, nurses or female physicians.

Under no consideration should women be placed at what might be called dangerous occupations, or work where they are likely to be poisoned or suffer bodily injuries through explosions. They should not be placed in departments where gas fumes or dust would prove detrimental to their health, nor should they be subjected to intense heat or intense cold.

In introducing woman labor, new buildings or new departments or new floors should be added, if possible. Women should be segregated if this can be done, either by new buildings or rearrangement of departments or machines. At first men would have to be used as foremen but later forewomen could be used.

There should be no smoking by men when men and women are working together, and it would be well to allow women the right to sing as they work. There should also be provision for emergency illness with a nurse in charge if no hospital is a part of the plant.

As work is bound to get monotonous, if the same thing is done all the time, arrange as far as possible to change the tasks during the day so as to furnish some variety, a variety that will keep a woman standing at one time and sitting at another.

After lunch and during recreation periods, women should be allowed to completely relax and enjoy themselves, as this will be found to keep them in the best mental and physical condition. A music room with piano or victrola, where they can dance, will be found a most excellent provision. Physical exercise during one of the rest periods will be well worth the effort as all will appreciate the value of 10 to 15 minutes of setting up exercises daily. A library with books and magazines will be used to advantage by those who do not care to dance. Provide rest rooms for those who would rather lounge than dance or read.

Shops should be kept as clean as possible; dark nooks and corners should be done away with, so that everything may be kept clean and light; walls and ceilings should show plenty of white and it would also be well to paint machines with a white oil proof enamel, all of which will do much to make the shop a real second home to the women, whose maternal and womanly instincts should be appealed to. Are they not worth it?

Separate entrances for men and women should be provided, or better yet, men and women should arrive and leave at different hours, so that there will not be that intermingling that is often so objectionable to women.

Working clothing of women should be standardized. Overalls can be used or waists and aprons. Caps should be worn for protection of the hair. Whatever is used should be uniform, neat and kept clean. If all are dressed alike, there will be less rivalry as to dress and less in the way of comments by the women regarding the matter of dressing.

A matron should be employed where women are at work, who can see to it that the factory laws are lived up to; watch for any violation of the "safety first" rules and also look after the general health of the women. If possible, this matron should be a nurse.

Provisions should be made for properly policing the streets when women enter and leave the works, so as to guard against women being molested by rowdies and loafers, so often observed on our street corners in industrial sections.

It is also recommended that 45 minutes be allowed for lunch, to give the women ample time for eating as well as for recreation.

There should be provided for the women workers, dressing rooms, lunch rooms, toilets, drinking fountains, lockers and a hospital which can be used for a rest room during recreation periods.

The providing of healthful working conditions while important where men are concerned is doubly important where women are used. If women are willing to step in and fill the places the men have left vacant in industry, it is only right that industry should surround them with conditions conducive to their health and well-being.

As regards how this work should be done it was felt that there should be Government standards with supervision of such an organization as the Y. W. C. A., to maintain them, working through women's committees, the matrons in the plants to be the point of contact between the employers, the workers and the Government.

With reference to sex complications, Rheta Childe Dorr has this to say in the New York "Evening Mail"—

"Let us be quite frank and translate 'complications,' as most people will employ the word in sex complications. Should we have that bogie to deal with if American women took over the civilian tasks now performed by enlisted men?

"The highest English command raised that question when Florence Nightingale took her first heroic little band of women nurses out to the horrors of the Crimean campaigns, and that little band of heroic women answered the question for all their sisters who were to come after them.

"Have any 'complications' arisen from the thousands of Red Cross nurses who have volunteered for the field during this war?

"Have the Y. M. C. A. and the Y. W. C. A. women 'complicated' matters for any army? They have not, and neither would any other service of women at home or abroad."

G—Living and Social Conditions.

The matter of clean, wholesome living and social conditions can best be handled through an organization of the manufacturers of a community, unless a single plant is of such size that the necessary investment can be taken care of without embarrassment. The women in the vicinity of a plant will frequently have their own homes where they will live, but the women drawn in from the surrounding country will require clean, wholesome places where they can board at a cost consistent with the wages which you are able to pay them. Many of these women can be placed by carefully canvassing the respectable families in the neighborhood and finding those who are willing to take boarders. Good results can be accomplished by constructing boarding houses and placing them under competent managers. These can be run at cost or at a slight profit, and excellent wholesome surroundings can be provided at extremely reasonable rates. Often women will desire to club together and take a house and the company should be able to provide houses at reasonable rentals to those desiring them. The advantages of the company boarding houses are that they assure the women of meeting other women and having social inter-

course. The lonesome woman soon leaves her job and goes home where she is known.

The contentment of a woman employee might be said to depend one-third on wages and working conditions, one-third on living conditions, and one-third on good wholesome amusement. The question of amusement is an important one and seldom receives the consideration which it deserves. If a woman thoroughly enjoys herself during her hours away from work it will be difficult to induce her to leave the community she is in even for higher wages.

Amusements are simple to provide, as they should be made self-supporting and all that is needed is the initiative to start them. Bowling, sewing, dancing and card clubs should be arranged for. All that is needed is bowling alleys where respectable women can go, or a room large enough for them to dance in, or where a number can sew or play cards. Even outdoor sports are appreciated and a few tennis courts could be used and paid for as used. Moving pictures are a standard amusement and if there is no theatre in your town where good pictures can be seen at a very reasonable price, one should be provided.

If there are class distinctions do not try to combat them for you will fail. Let the women determine their own social levels and run their own clubs, admitting whom they wish. All you need to do is to supply the initiative to start them. Above all, do not deal with your employees on a charity basis. Let them pay for what they get, and make it as reasonable as possible. There never was a worker that did not resent anything resembling charity.

Y. W. C. A. cantonments, community kitchens and dormitories will assist materially in the matter of feeding and housing women workers, if the manufacturers of a locality cannot get together. On a large scale, social settlements can be developed.

Organizations should be formed for the mental, social, physical and religious betterment and welfare of women.

Co-operative club houses to be run by women for women is another means for solving the problem of providing proper living and social conditions.

Don't overlook the importance of a woman's gymnasium, in club houses and arrange for women to invite their men friends to dances. Have fudge kitchenettes and spooning parlors—they will help materially.

Neighborhood recreation centers under church or women's societies can be worked out in a campaign to look after the women during their spare time. Provide plenty for them to do but the decision must be theirs to a great extent as regards what they will want to do.

There should be instructions as to wholesome living conditions by traveling nurses and nurses' associations of the Y. W. C. A. can do a great work in keeping living and social conditions on a high plane.

You must not overlook, however, that women workers are going to have a lot to say, and rightly so, about this big question of living and social conditions and as many have said, the same pay as men for the same work, will enable women to go a long way towards working out their

own salvation. On the other hand, what is done for them, if it does not savor of charity, will be welcomed and appreciated.

Employers can do much to see that right conditions are provided, but a far greater work can be done if there is plan and program to it all, backed by Government support and co-operation.

A government Commission should first of all work up proper conditions as to living and social welfare of women, leaving sufficient latitude for the consideration of purely local conditions, for they are bound to vary with the different sections. Certain matters pertaining to the health of women workers could be put up to the local health boards. Committees of women workers could be organized to work with the other bodies having this question of living and social conditions in charge.

Campaigns among industrial leaders; propaganda as to safety first, health, diet and the like; organizing the superintendents of plants to co-operate, are steps which will lead to substantial results.

An organization like the Y. W. C. A. or the State Councils of Defense could well have such a work in hand, or the women's clubs of the country could form committees and organize social workers corps in the various localities.

Where Legislation, either State or National, is needed to provide proper conditions for women, the women, in conjunction with the manufacturers and the Government officials, should see to it that they get it.

A social secretary for each plant employing women would be an excellent move, these women to be selected by the Y. W. C. A., or directing body, to work on all problems affecting the lives of women out of the shops, the same as the plant matron looks after the conditions of women while at work in the plant.

Another suggestion was that living and social conditions affecting female labor should be investigated continuously by authorized parties appointed locally; these investigations to be paid for by the manufacturers employing women, in proportion to the number they employ.

H—State Laws.

As regards the matters of changing or unifying the existing state laws, there was quite a difference of opinion. Some felt that national legislation was immediately necessary, while others thought that the laws in the various states were satisfactory as they are.

One suggestion was that national legislation should set aside present laws, for the period of the war, after a standard set of rules governing woman and child labor had been developed, and finally enact a uniform Federal law governing all labor.

Another suggested that state laws should be modified and corrected wherever necessary, to circumvent both unfair employers and labor unions.

From the answers received plus an analysis of the state laws, there seems to be a need for some national legislation of an emergency nature, so that standards can be set and then maintained and while it may be said, and truly perhaps, that the present is no time for new legislation as important as this, it was felt that much could be done by bettering the present laws.

Legislatures of the various states could appoint Committees and work

together and with the government, women's organizations, labor unions and bodies representing the manufacturers, out of which a uniform law embodying the best in the present laws could be developed.

One suggestion was—"grant suffrage and then consult the women." Another was that a national organization be formed in which labor, the employers and the government would be represented to undertake this matter of changes and unification.

In appendix A will be found a digest of state laws, a study of which will clearly indicate the need for national legislation. We cannot vouch for the extreme accuracy of this compilation, but we have taken it from reliable sources, compilations as made by the "American Machinist" and the "Merchants National Bank of Boston."

A few words regarding the differences in the state laws will prove illuminating.

Of the 49 divisions represented, only California and the District of Columbia limit the day's work to 8 hours and the week's work to 48. Although an 8-hour day has been legislated by Arizona and Colorado, the weekly limit is 56 hours—thus countenancing the 7-day working-week.

The 9-hour day for women is established in 14 states in 6 of which the weekly limitation is 54 hours; in 3, it is 54 to 60 hours; and in 2, no weekly limit is fixed.

Ten hours women's work per day is lawful in 11 states and 10 1-4 in New Hampshire (in a 55-hour weekly limit). According to the law as amended in 1911, Illinois permits a woman to work up to 70 hours in a week. (Later compilations were not available in preparing the digest).

Besides Illinois, 4 states allow a 7-day working week—Colorado, Montana, Texas and Washington.

Iowa and West Virginia place no limit whatever upon woman's working hours, as such. Indiana appears to have no limitation laws; and as to 14 states, available information is lacking as to current status of such laws.

In a number of states certain occupational exceptions are made—especially as affecting women's night work; but speaking generally 37 states permit women to work after dayshift, and 2 do not (Michigan and Pennsylvania). Nine states do not make the night-work clause effective unless it continues until 9 P. M. or 10 P. M.

In no particular is the object lack of uniformity shown better than concerning an attempt to regulate minimum wages for women. Nine states attempt definite regulations but in almost all instances, exceptions are in evidence.

Some states claim the minimum as "based on economic principles" (abbreviated BEP). but variance here is also great. California shows the highest minimum \$43.33 per month (\$10 a week); but its BEP rate is 13c to 16c per hour—and there a "pound scale of wages," also. Utah gives 90c and \$1.25 per day as minimum. while Colorado makes the rate \$1 a day, or \$20 a month (which latter figure is equivalent to less than 80c a day for a 26-day month).

Though showing sharp graduations, the female child labor-age-limit is more uniform than any other of the data shown. There appears to be

a genuine attempt to discourage employment of girls younger than 14 years. The 27 states naming this limit are out done, however, by 3 states that place it at 15 years, and 10 states which have raised it to 16 years.

In seeking legislation to exclude women from objectionable occupations, it is natural that mines, and saloons should be prominently mentioned; but the only other similarity affects "cleaning moving machinery"—an objective more appropriately reached, it would seem, by a general revision and clarifying of factory inspection and safety laws. Another similar illustration is seen in the attempt to bar women (in New York) for "all grinding and polishing operations;" whereas, it is well known that adequate plant equipment will include capable exhaust blowers that remove the dust-laden air and thus make such departments entirely habitable. Moreover, if it is well to make such exclusion of women as the score of public health, it is equally desirable to prevent the menace from reaching male workers; and the logical way to remove this and other industrial dangers is through carefully planned factory inspection and safety requirements.

I—Co-Operation of Labor Unions, Women's Associations and the Government.

1—LABOR UNIONS:

It was felt according to the answers received, that the labor unions would not take kindly to the introduction of women labor and that we could expect to have the same trouble England experienced at first in her attempts to utilize women labor to the fullest. The clash that is ever with us between capital and labor, is another reason why this matter of using women in industry will not be settled without considerable discussion and debate between workers and employers. This will be especially true if the labor leaders take the stand later on that there is no shortage in labor.

In the first place no wholesale attempt should be made now to use women in industry. Man power should first be used fully and efficiently. Plans for women in industry should be worked out from now on however, for in the event of a long war, which seems likely, women will be needed to the fullest extent. To this end steps should be taken by the government, by manufacturers, and by women's organizations, to make organized labor realize the seriousness of the international situation. If public opinion cannot induce their leaders to see need of women in industry, sheer necessity will sooner or later force them to allow women to work side by side with the men.

To secure the co-operation of labor, there should be publicity and appeal to show them the real situation as it is likely to exist in case there are several years more of war, in order to get labor to waive restrictions on output, and the use of women during the war, as England labor did.

All steps should be fully explained at an early opportunity and nothing short of the utmost frankness on both sides should be considered for a moment.

Efforts should also be made to analyze and anticipate the fears of labor, for in this as in everything else, differences are the result of mis-

understandings, and there should be no misunderstandings in this crisis. It should be made plain to labor that no displacement of men will be made when men are available; that men returning after war will be given work to do—and this must be government promised which should be carried out. If these are agreed to, no difficulty should be encountered especially if in the use of women, there are the following considerations:

Equal pay for the same work; same hours; right of women to organize; suffrage; and maintenance of proper working, living and social conditions.

If labor objects after the above are provided, then it hasn't a leg to stand upon, and the government should step in, establish profits, arrange for compulsory arbitration, waive restriction on output and use of women labor, prevent cutting of rates and insure proper working conditions.

My own conviction, and that of many I have talked with, indicates that organized labor will not object to women labor if it understands that women labor is not needed now and that the rights of women and of labor in general will receive consideration.

It is thought by some that labor unions should incorporate so that they can be dealt with the same as business corporations are, so that by bringing both together, with government representatives, proper rules and legislation can be worked out, that both would have to live up to.

It was also thought that women should be allowed to join unions or form new ones of their own, and that they should work in harmony with organized labor.

It was also felt that the War Labor Administration or the National Chamber of Commerce, or both, should in conjunction with the American Federation of Labor and the Council of National Defense, find a solution of the labor clash during war times.

WOMEN'S ORGANIZATIONS:

No difficulties are expected in securing the full co-operation of women's organizations, in fact they are doing nobly at the present time, in doing all they can to win the war.

In getting them to work to the fullest in making "women in industry" a real success, the appeal must be made to patriotism, sense of duty, the need for them in this crisis and that the underlying considerations will be, equality with men; earnings as a basis for social standing; proper working, living and social conditions; right to organize; no loss of caste because women work in shops; no exploitation; same pay for same work; enforcement of better laws and the maintenance of high standards.

To this end propaganda is needed through the lecture platform, the press and magazines, churches and schools and trips through plants to explain why women are needed, what they would be called upon to do, and the manner in which they would be called upon to do it.

GOVERNMENT:

What was said with reference to union labor and women's organizations, applies equally well to the government. Manufacturers must get together and work with the government as well as with labor. The politicians must be made to see the need of women in industry, in increasing

numbers, and have the courage to come out and say so. The National Chamber of Commerce can be a factor along these lines. Some felt that full co-operation of the government was not necessary. Even if this is so, and I doubt it, it would be a decided help to get the government to take the initiative and working with the manufacturers and with labor, see to it that we efficiently use and at the same time properly safeguard, our women workers. In this connection all present work should be co-ordinated and any laws against the proper utilization of women in industry should be repealed.

The new War Labor Administration should make exhaustive investigations of this whole subject and with government officials in conjunction with representatives of manufacturers and labor, devise ways and means, of using our women in industry.

Post-Bellum Considerations.

The question—"What about woman labor after the war"—is a most important one. One of the reasons labor is opposed to women in industry, is its fear that women will remain to displace men after the war is over, which makes a consideration of this point very necessary.

Many of those who answered the question felt that the situation would take care of itself when the war is over. Many soldiers will marry upon their return; women in the factory will meet and marry shop men and take up domestic work later on; other women who desire to do their share during the war will go back to the pre-war occupations or activities—homes, offices, life of leisure and the like; those who become skillful and like industrial work will want to remain in the shops. It was felt by many that if the war lasts long enough, we will number our dead and disabled through injury or disease by the hundreds of thousands, thus depleting the industrial ranks. Thousands of the disabled will have to be supported in many cases by the wives or sisters of the crippled or diseased, all of which will call for many women remaining at work.

The opinion of many is that the reconstruction is going to call for so much in the way of replacements, new construction and the like, that labor will be in great demand for years to come and that this very demand will induce many women to remain in industry.

The general feeling was, however, that the men who return should be given back their old jobs or that new work should be found for them; that home would make the real appeal to women and many would drop out for this reason, and that while the life of independence and high wages would hold a great many at work, many others would drop out because of not finding industrial work to their liking.

Several other factors must be also taken into consideration. Many foreigners will return to their home countries after the conclusion of peace, which will make large gaps in the ranks of industrial workers. One man wrote—

"We employ quite a large percentage of foreign labor and from my observation I am inclined to believe that a large majority of these foreigners will return to their native country as soon as the war is over. Germany and Austria-Hungary are, we understand, offering great inducements for the return of their subjects after the war and these subjects can return in a very much higher

plane than they left. They have been fattened by war wages and in a great many instances will be able to practically retire, accordingly, the women that are now induced into industry enterprises will be needed for a good many years after the war is over."

Steamship Companies report that from 500,000 to 1,000,000 aliens are planning to go back to their respective countries when the war is over. About this point, Frederic C. Howe, Commissioner of the Port of New York, says—

"Instead of surplus of labor there may be quite a universal shortage and those countries that make conditions most attractive are going to secure immigrants and keep their own population."

In other words, we may change from an immigration to an emigration nation.

If the plan of using women in industry works properly, and society as a whole is benefited, employment of women will undoubtedly continue. There is no question about it, the use of women in industry is going to teach valuable lessons to both labor and capital; through suffrage which is coming, women will have a greater say about things than ever before, and as the war is developed a place for women in the conduct of affairs, she will have a voice, in whether or not she will be used by and in industry, and if used how it will be done. It will be found, at any rate, that the best of men and the best of women will naturally improve things, both in and out of industry.

With reference to women returning to their old lines of activity, Rheta Childe Dorr, in the "New York Evening Mail," has this to say about the English women—

"They were to be put out of the trade as soon as the emergency was past, but now it is beginning to be feared that they can't be put out. Think of the black ingratitude of any set of men, trade unionists, soldiers or statesmen, who would try to put them out.

"Some of the men in the shops, foremen and skilled workmen who have taught the women, helped them to develop skill, openly declare in favor of keeping them on. Many employers say that they will keep them.

"The opinion has been expressed that the women will voluntarily leave the mechanical trades. Many married women probably will. Some, perhaps, of the leisure class women who have gone to work from patriotic motives, will go home, do church work, pour tea and read novels. More of them will have learned to love work for its own sake and they will stick.

"That any number of women now working for good wages in skilled trades will meekly hand the jobs over to men and go back to \$3 a week in a millinery, dressmaking and domestic service, is to my mind unthinkable. Imagine a woman who has risked her life loading shells, who has known the job of creating great steel engines, of making winged machines that helped to win the greatest of wars, going back to washing dishes or toiling in a hot loft on a power sewing machine."

It must be remembered also, that the war is teaching men the wonders

of outdoor life and many will go west and on farms, and this will also have its influence in creating a demand for labor after the war, and while at first there is bound to be a violent readjustment, it will be of short duration as there will be so much work to be done in the way of reconstruction that everyone who will want to work, will find work to do.

One man said—

“After war, smart women will work, lazy loaf, same as now. Might put petticoats on 3rd rate men and trousers on the smart women.”

It looks very much as if the proposition will adjust itself, as men and women will fit themselves for tasks they can do best. We cannot get away from this basic argument—if there is a dearth of men, women will be needed and will work, whereas if there is an oversupply of men, women will have to give way. The law of supply and demand may be expected to work here as in other things.

As a constructive measure a national commission should be appointed by the government or the War Labor Administration to consider this very point, conduct investigations and work up a logical plan demobilization of women in industry; of maintaining the army as it returns and releasing the men to industry gradually, so as not to dump millions of them on the labor market, before plans for the handling of both male and female labor, have been worked out.

Conferences with these ends in view, between labor unions, women's organizations, employers' associations and the government should also be arranged for, as well as a program of co-ordinated action between the employment bureaus of the country.

There may also be quite a little legislation necessary, as for instance a law to prohibit married women from working in industry, who live with their husbands and whose wages are sufficient to support both.

In connection with these twelve questions, it may be interesting to note the replies of Hilda Muhlhauser Richards, Chief, Women's Division, Department of Labor—

1. How are we going to find the army of women needed?—Answer: Through registration at city, state and Federal employment offices and all other agencies.

2. What basis shall we use for selecting women?—Ans.: Experience and training.

3. What efforts shall we make to provide proper living conditions?—Ans.: Must be provided through government housing.

4. What changes will we have to make to provide working conditions?—Ans.: Establish through legislation.

5. What social conditions will we have to provide?—Ans.: Provision for recreation and volunteer units to look after women like the English System.

6. What hours should women work and how about rest periods, fatigue and the like?—Ans.: Eight hours.

7. How will we arrange to subdivide and arrange the operations so that women can efficiently perform them?—?

8. How will we train women and who will do it? Ans.: Through vocational training schools and classes in factories under government.

9. What steps will be necessary to induce the full co-operation of—
(a) Labor Unions? (b) Organizations of women? (c) Our Government?
—Ans.: Committees. Dr. Anna Howard Shaw Committee. Department of Labor, Women's Division.

10. What step necessary to change and unify State Laws?—Ans.: None.

11. How shall we adjust and arrange the wages of women?—Ans.: By careful legislation like the 8-hour law for engineers, conductors and trainmen.

12. What will we do with reference to woman labor after the war?
—Ans.: Prepare now. Commission ought to study readjustment.

In Appendix C will be found a list of representative opinions of many of those answering the questionnaire.

Standards.

The Ordnance and Quartermaster's Departments' standards and the standards of the Women's Trade Union League regarding this question of women in industry along with some standard practice worked out by the Executives Club, of Detroit, are herewith submitted, as they will be found of value in connection with a proper consideration of this subject.

Standards Ordnance Department and Quartermaster's Department and Division Women in Industry, Women's Committee of Council of National Defense.

Standards for Employment of Women.

1. Hours of labor.—Existing legal standards should be rigidly maintained, and, even where the law permits a 9 or 10 hour day, efforts should be made to restrict the work of women to 8 hours.

2. Prohibition of night work.—The employment of women on night shifts should be avoided as a necessary protection, morally and physically.

3. Rest periods.—No women should be employed for a longer period than four and a half hours without a break for a meal, and a recess of 10 minutes should be allowed in the middle of each working period.

4. Time for meals.—At least 30 minutes should be allowed for a meal, and this time should be lengthened to 45 minutes or an hour if the working day exceeds 8 hours.

5. Place for meals.—Meals should not be eaten in the work-rooms.

6. Saturday half holiday.—The Saturday half holiday should be considered an absolute essential for women under all conditions.

7. Seats.—For women who sit at their work, seats with backs should be provided, unless the occupation renders this impossible. For women who stand at work, seats should be available and their use permitted at regular intervals.

8. Lifting weights.—No woman should be required to lift repeatedly more than 25 pounds in any single load.

9. Replacement of men by women.—When it is necessary

to employ women on work hitherto done by men, care should be taken to make sure that the task is adapted to the strength of women. The standards of wages hitherto prevailing for men in the process should not be lowered where women render equivalent service. The hours of women engaged in such processes should, of course, not be longer than those formerly worked by men.

10. Tenement-house work.—No work shall be given out to be done in rooms used for living purposes or in rooms directly connected with living rooms.

Standards of Women's Trade Union League.

Women's Trade Union League has formulated standards which are subscribed to by the Women in Industry Committees of the State Councils of Defense. They are—

Adult labor.

Equal pay for women when they do an equal amount of work with men.

An eight hour day.

One day of rest in seven.

Elimination of night work for women.

Exemption from call of women who have small children and for two months before and after childbirth.

That technical and trade training be opened to women in all schools and colleges on equal terms with men.

Standard Practice Executives' Club, Detroit.

Report of Committee on Standards of Working Conditions.

In order to protect the women who may enter industry at our solicitation and to provide for them fair working conditions, the Committee on Standards of Working Conditions submits the following recommendation:

1. That the Recruiting Committee investigate the applications from married women with children to ascertain if the children are properly cared for. Results of investigations to be filed with the Central Bureau.

2. That women be given **equal pay for equal work**. While learning they shall be paid the flat day rate paid men for the same work or operation. This recommendation has the endorsement of the Detroit Division of the Women's Committee of the Council of National Defense, as they passed a resolution to this effect on May 14, 1917. The committee understands that the Buick Motor Car Company, of Flint, Mich., is at present paying women on this basis.

3. Because of the experience of England, where it was found that shorter hours resulted in more and better work, we suggest that the working day for women be limited to eight hours and that the maximum weekly hours be limited to forty-eight.

4. That the following working conditions are essential:

a. Separate entrances to be provided for women if practicable; if not, that women be allowed to report for work fifteen minutes later than men and leave fifteen minutes earlier.

- b. That separate workshops be provided if possible; if not, that there be both a man and a woman supervisor stationed in the mixed departments.
- c. That rest rooms and toilets adjoining workshops be provided with a matron in charge.
- d. That a sufficient number of drinking fountains be installed in each department.
- e. That the period for lunch be at least forty-five minutes.
- f. That if possible a restaurant be operated on the premises; if not, at least a counter maintained where a box lunch with hot coffee and tea and milk can be purchased at cost.
- g. That provision be made for rest periods during working hours, their frequency and duration depending on the nature of the work.
- h. That seats be provided wherever possible to avoid injury to women by standing all day at their work.
- i. That sickness insurance be provided to care for workers absent because of sickness.
- j. That workers on monotonous and tedious operations, to avoid undue fatigue, be transferred from time to time as seems advisable.
- k. That there shall be provision for first-aid attention to all workers.
- l. That there be first-class supervision of working conditions with particular reference to safety, sanitation, ventilation and lighting.
- m. That some person be delegated to act as welfare supervisor for the plant, to whom women shall have access and whose duty it shall be to have general oversight over welfare conditions. This position might be given to some woman already in the employ of the company, in addition to her other duties, but if possible a trained person should be secured for this work.

In setting up these standards the committee feels that its work would be useless and ineffective unless a permanent committee was appointed by the executives to investigate working conditions in each plant employing women to be recruited by the special committee organized for this purpose. Such a committee should not only make an investigation before placing the women, but should further make periodic visits to ascertain if the standards are being maintained according to agreement. Since it is almost impossible to set standards for first-aid and safety provisions, without an intimate knowledge of the size and kind of plant and hazard of the work, we deem it advisable that this permanent inspection committee treat each plant individually adjusting requirements in each case according to the conditions found on visitation.

We further suggest that this committee be made up of three safety engineers, three welfare managers, three employment managers and three time-study men, to be split up into three units of four members each, as the work to be undertaken will be heavy and more than one small committee can handle.

Report of Committee on Recruiting and Placing of Applicants.

Realizing its close relation to the Committee on Standards of Working Conditions, and to the Committee on Education, the Committee on Recruiting and placing of Applicants desires to bring to your attention that the acceptance of the recommendations of the Committee on Standards of Working Conditions is vital to the success of this Committee; also that it feels the matter of education to be so important to the success of any scheme for recruiting and placing that it wishes to include the report of the Committee on Education as a part of its own report.

It further wishes to point out that, if this work is to be co-ordinated with the plans of the Women's Committee of the Council of National Defense, any statements or recommendations here made must be contingent on instructions to be issued from Washington.

The Committee proposes, as a means of reaching women desiring to enter industry, to distribute application blanks through the available avenues of the various women's organizations co-operating with the women's committee of the Council of National Defense. If necessary recruiting stations can be established at the headquarters of these organizations.

As the Council of National Defense will issue uniform application blanks for general service, it is obvious that this Committee should wait upon the arrival of the government forms before preparing its special application blanks, adapted to the local conditions and plans, in order that the two may conform and our blanks, therefore, meet with ready governmental approval.

It is further proposed that a Central Placing Bureau be established where applicants shall present their applications in person, having previously filled out the blanks. Opportunity would then be given them to meet any further and more detailed requirements, such as later might be found necessary.

When an application is turned in, it should be filed and card given in its place to each applicant, directing the applicant either to a particular employer, if already qualified for a position, or to the Educational Committee for instruction.

It is recommended that the Central Placing Bureau be in charge of a competent paid attendant, operating under the direction of this Committee.

It also seems necessary that this Committee be authorized to include in its work the investigation of the applications of married women, to insure that the statements made on the blanks agree with the actual conditions in the homes.

It is further believed that a physical examination should be made of each applicant.

THE CHAIRMAN: Those of us who were present at the 1917 conference will remember at least one woman who has made her presence felt in industry. They will remember Miss Florence King, who through the various discussions reminded us of the part that women should play in industry, and it probably had no little influence on this particular conference. Miss King also is an example of what woman can do, inasmuch as she is one of the few practising woman attorneys in the country. It is my pleasure, therefore, to introduce Miss King, who is president of the Woman's Association of Commerce of the United States, who will talk to us on the subject of "Some Things Women Should Do to Help Win the War." (Applause.)

MISS FLORENCE KING: Mr. Chairman and ladies and gentlemen: It is indeed a great pleasure to speak to you this evening, and especially after having heard Mr. Knoeppel's splendid analysis resulting from the questionnaire which was sent to so many manufacturing concerns, business houses and individuals who have taken an interest in this subject of women in industry.

The women who have been in industry for a great many years have struggled very, very hard for the thing that Mr. Knoeppel through his analysis has now brought to your attention. Two things particularly that he referred to impressed themselves upon my mind, because it has taken us so long, it has taken us women so long to make that thought register at a place where it would be worth while or could bring forth any result. First, equal pay for equal work. Second, that women in industry shall not be exploited. Those are two things that have engaged the attention of women for many, many years. But, like other things, women having no power to execute their desires, have only had the ability to plead in a weak way and to petition and beg and hope and pray that some time, somehow, somewhere something would be said or done that would bring this to the attention of those who could handle it in a practical way. That it should take a great world war to bring about these changes, these readjustments that should have been brought about as a matter of justice seems most strange. But if it had to come that way, we are glad that it is here now.

This organization, I believe, is the first man's organization that has given serious consideration to the question of women in industry and to the question of readjustment now that the war makes it necessary. You are handling it in a most scientific, in a most practical manner. Surely some great good must come out of this.

When I was asked to speak about the subject of some of the things that women should do to win the war, I felt as though there should be a double-header to that subject, and the second part would be some things that women would like to do to win the war. I fear that if I should speak exactly what is in my mind that I too would be put in the class that it seems Mr. Knoeppel has been sometimes when he has been considered a pessimist. As a matter of fact, he is a most extraordinary optimist, because he has the courage to point out the things that need to be changed, things that have been in the past mistakes. So if I should appear in what I have to say this evening to border very closely upon pessimism it is not that I am of a pessimistic turn of mind, but on the contrary that I am very

optimistic; but I do like to point out some of the things when I have an opportunity to speak to men particularly, and give them a woman's viewpoint.

My contention has always been that we will work together better when we can get the best ideas from both men and women. As you know, any system that is one-sided soon gets over-balanced, and that is what has been the trouble here for so long, because ever since the Civil War women have been in industry, have been in the business world, but have been there rather under protest, not wanted exactly, but as nobody could keep us out we have kept on going down the years until the year before the war broke out ten million of us were in the industries in this country; surely enough to speak now with a voice loud enough to be heard. I hope that many of these conditions will be changed, and once they are changed they will remain changed forever.

The first thing that women should do to help win this war should be to give their loyalty. Every woman, whether she is native or foreign-born, should be loyal to this government absolutely. Whether we have grievances or whether we have not should make no difference. She should not only be loyal herself, but insofar as she has ability to do so should see that those about her are loyal. To report any evidence of disloyalty is a splendid thing to do at this time.

We have so many different types of patriotism in this country that it is rather startling. One type that was brought to my attention in court the other day was a very well-to-do family in Chicago who had displayed in their window a service flag containing a single star. Many people are very proud of those flags and justly so. Upon investigation it was found in this instance that that single star represented a chauffeur formerly employed by the family and that the two sons of the family, both of military age, were enjoying the winter on the golf links of Florida.

There are some types of patriotism that make us almost ashamed, and we have to speak of them with an apology. There is much to be done then on the question of loyalty, and that is to apply, of course, to men as well as to women, so that wherever there appears to be an evidence of disloyalty some mention should be made of it so that that person, man or woman, would be found out and placed in his right list.

This, as I said before, is not a time to point out mistakes, but at the same time where mistakes can be pointed out with the idea of more constructive readjustment it seems to me that surely criticism is always in order, and now that women are called upon and the nation is asking us to take such great responsibilities it would seem but right and fair that women should have greater representation in our national council. How can we be heard, how can we be understood until then?

Is it possible that the people of America who are supposed to be the most progressive people in the world do not understand that at this time the brightest minds among our women in this country are devoting their best effort, their best attention towards securing that federal suffrage amendment, that amendment that has been pending in congress nearly fifty years; is it not long enough that America should heed its women's plea for democracy and extend its suffrage to us now so that our efforts

should be released toward helping more in these other great problems that are before the country?

When you think of the great army of women who are giving all their spare time on that work now, who would be so glad and so willing to do a greater measure of war work, but realizing as men do that unless that amendment passes during the war none of us will ever live long enough to see it become effective; the women of this country have worked too long and too hard in doing the pioneer work that has been done here to be cast aside now, even though our country is facing the greatest crisis in our national history. Is it not time that America should pause long enough to extend democracy to its women at home, place them in a position where they can render better service than they are rendering now, and in that way place them in a position where they can do very many more things toward helping to win this war than they can do now?

One of the little mistakes that has been made in our present congress that I dare say would not have been made if there had been women in congress who could have taken a hand in this matter has reference to the enemy registration law, compelling all male alien enemies to register, to give certain information to this government, that the government may know how to proceed with them. That law did not include women. Does that mean that women do not know enough to do any damage to this country at a time like this? And have you observed since that registration law took effect how many women alien enemies have been unearthed and discovered as spies in this country, who had worked so carefully before that that no one seemed to pay any attention to the fact that women could be alien enemies?

That has precipitated a condition that practically nullifies the effect of the alien registration law, because practically every man who registered has a wife, mother or sister or some woman who acts for him and is his agent in doing what he must be more cautious about doing lest he be caught on his own registration.

That is one of the things that I am sure women would have observed before the law went into effect. But even when it was called to the attention of congress by thousands of women in this country, no attention was paid to it until the matter became so serious that it was necessary to enact a new law, which is in the process of going through at this time.

Those are some of the things that, I believe, if women had a voice in these matters, greater efficiency would be found in dealing with than we have right now.

I do not know why it is, but there are certain instances when men seem to be afraid to deal with a woman. That is apparently one of the instances, and it is a serious question, too, as thousands of you will know who have watched the developments, particularly in New York, Washington and Baltimore.

Other things that women should do to help win this war are so many that I can only touch upon a few of them this evening. One thing is this, that all women should become producers, and when they are, what a large army will be added to the workers we already have!

We have a great class of women in this country who are by no means

producers of anything useful. We have in the woman power of this country something that is not being utilized at all, largely because they are not properly organized, and no one seems to know how to organize them. The government has taken hold of that, the State Council of Defense, and so forth, and you will find them all traveling around in a circle not knowing what to do or how to go about it.

One thing that I have observed in our own local administration here is the fact that the women who are undertaking to do these things are all inexperienced women. They are wives of wealthy men who find an opportunity to come before the public as they never have had it before, and it is fascinating to them. That as you know, though, does not mean efficiency. Efficiency is only acquired by training and experience, and those women don't have it. But no effort is being made to seek out the women of experience and capability, and those women are all too busy to try and hunt themselves the places that the society women are seeking.

We know that those of us here at home have a duty to perform in this war that is just as necessary, just as essential as the duties that are being performed by the soldiers over seas, but when we are three thousand miles behind the firing line we do not begin to get the horrors of war as those who are in Europe do, and are experiencing every day. The war has not touched us up to this time as it will, say, in one year or more when we begin to have the returns from this tremendous battle that is raging right now. Then will come to us the horrors of war as we have never experienced them before. We will begin to understand what it means to send these soldiers to Europe, what it will mean to supply munitions and food and clothing for them. Those are the duties that are for us to perform here at home, and it means much to be able to do that and to do it in a way that will meet the requirements.

Mr. Knoepfel has told us what proportion of our munitions and our food and our supplies that are being sent over there go to the bottom of the sea. What does that mean then for us who are here at home and for the number of soldiers that we ought to be sending over there?

We have at this time our government calling upon women to perform services they have never rendered before, and women have always responded when demands have been made upon them, and I believe they will do it again. We have many occupations that are new for women, but at this time the government desires them to undertake new training and perform services which it is believed theoretically they can perform, and I believe they will be found able to do it.

Today I have from the War Department a request for women who will receive training as inspectors of war material. That will require an educated, well-balanced woman. But I believe there are enough of them in this country who are ready to respond for just such duties as that. They are making a trial of this to see if women can do it, and if they can, each place they can fill with a woman releases a man for service. This will be an interesting line of work for women to undertake, and I believe that we will find the women in this country who are able and ready and willing to respond to that call.

A while ago it was a great problem right here in Chicago, what shall

we do with the woman over forty, to find her employment? They do not want her in the office because so many young girls can fill those positions and for some reason or other they are more desirable. So that the woman over forty seems to be an outcast, and yet there are so many positions she can fill and so many services that she can render that would be much more efficiently done with her years of experience, regardless of what her experience has been. I think the woman over forty is fit to fill these positions that the government is so sadly in need of at this time.

One of the additional things that women are being called upon to do now, as they were a while ago, is to help place this next Liberty Loan, and women will help to do it, too. When the last Liberty Loan was brought here to Chicago and our proportion among the women was supposed to be \$750,000, they thought if the women took half of that they would show a high degree of patriotism. And you know the women went to work on that Liberty Loan. It may not be new to you, but I shall repeat it any way. The women of Chicago took \$7,000,000 worth of those Liberty Bonds, exceeding by a long way the most, the very most, that was expected of them. And so they will in all these other demands that are made upon them, if they are but given the opportunity. So that as I have said again and again in my talks in the past, if we can only mould public opinion to the point when they will see and understand that what the women want more than anything else at this time is to be given a man's chance to produce results, then watch whether or not they will do it in the same ratio, in the same proportion, that they took the amount of Liberty Bonds that they were supposed to take. And they will do it.

One of the things that we have found—and when I say we, I mean the women who are in the world making a living for themselves and for others; who know something about the conditions as they exist here—one of the things that we have found has been, just as Mr. Knoeppel's analysis shows it still to be, that so much attention is being paid to the details surrounding women in the business or industrial world that they forget the big idea, the thing that stands out paramount before the woman herself. It is all right to have good surroundings, a splendid environment, good machinery to work with, good social conditions and all of that, but there is something more. The great incentive seems still to have been forgotten. When we talk about equal pay for equal work, of course that is a great step in advance, and we women appreciate it, let me tell you. But after all of those conditions are taken care of and the general analysis made by Mr. Knoeppel is the same as is being followed today; we find nurses and welfare workers in every large organization where women are employed, looking after their personal welfare. Our contention is that there is as much need for the attention being paid to the personal welfare of the men employees as for the women. Why direct all of these young women as to the different things they are going to meet, the moral conditions that surround them, and so forth; why talk with them about it and keep them, and send them out where they meet the men who have had no training along that line at all, who have no standards that they are being taught to follow? Does it not nullify all that is being done for the women to have that condition prevail? Why not have the same kind of attention

paid to both the men and the women? I believe better results would follow. It is bound to. When you remove the cause the effect will usually take care of itself. But when you remove only half the cause, that half is going to be contaminated by the other half just as sure as anything in the world.

We find in all the large manufacturing establishments, and I believe it is a rule almost without exception, that among the officers, among the managers, the heads of departments, the superintendents and all of your other executives, you point with pride to John Smith and George Brown and others who started out here in our shop as a boy. He learned the business and he has been promoted from time to time until he has reached the presidency or he is the manager, he is the treasurer or the secretary of our company. It is a matter of pride, real pride. How many times can you find that there is a woman who started there in the factory in the same way who reaches to such a position? She finds that she gets up to a line beyond which women are not allowed to go; merit does not count. Now, for efficiency there is nothing that is the stimulus to greater achievement than promotion and recognition of service well rendered will be.

Equal pay for equal work is a good thing, of course, but we do not want to stay doing the same work right along, even though we get the same pay. What women would like and what I believe so many of you would find would be the greatest incentive to women to do better work and to advance more rapidly would be to put them in line for promotion for merit, for services rendered. You will find then an incentive. That incentive has never been extended to women before, as most of you well know. The civil service laws covering the best positions either to men or to women close the best positions to women, even after taking the examination. The very fact that she is a woman disqualifies her. That is another thing that this war is changing. Women are eligible to take the examinations for many positions they were not before, and they are filling them with credit to themselves and to their employers.

I speak of these things as I say, not by way of criticism. No one is to blame for it, but it is a condition that has existed in the past that should now be changed, because we are living in war times, and in war times we learn to do in weeks of time what we take years to learn in times of peace. And when we are looking for greater efficiency now and more opportunities, more workers, let us analyze and see what it is that would be the greatest inducement to our women. I am sure we will develop many things that will be new. In fact, I believe before this war is over that one of the greatest assets in America will be discovered, and that will be the undeveloped ability of its women. Why should that not follow as a natural course?

Take the boys and girls when they start to school and go through the grades, go through the high school, and what do their records show? You will agree with me that the girls are the ones who stand at the head of their classes. And why? There is not any particular reason why that should be so because there they go in on an equal basis. Their work is exactly the same; their conditions are exactly the same. But the results are very different. When they get to that point that is about as far as

the girl is permitted to go, because when she gets into the business world as I say, the opportunities for promotion on merit have not been extended to her, and so she has never had that equal opportunity that she is entitled to and that I believe is going to come to her now through the war conditions which we are facing.

We have before us the question of food conservation and food production this year as one of the vital things in winning this war. We are told constantly that food will win the war. We are urged to greater production, greater conservation along all lines, and certainly the women are co-operating in that. With the garden movement last year there was added to our agricultural interests \$350,000,000 worth of products raised largely by the women and children in their little garden plots. In another year, with the experience of last year, surely we should more than double that amount. But on the question of increased production, the farmer is confronted with a situation that will be rather startling around harvest time. He will not have the labor with which to harvest his crop. That is a great question how that is going to be done. We know that the women of the foreign countries engaged in this war are carrying on the agricultural interests to a very great extent, and they are doing it successfully, just as they are doing many of the other kinds of work undertaken by them, and as Mr. Knoepfel has said, in Europe they have been put to the most extreme test, and they have met the requirements. They will do it in this country, but the readjustment seems so difficult to make.

A farmer cannot think even for a moment of employing women on his farm. His farm is largely operated by tractors, reapers, mowers, binders and all of this machinery that now minimizes the labor on the farm, and they are operated so much like the automobile, and here we see women on the street, on the crowded street in this loop district, driving their automobiles every day with a great deal of courage and fortitude, and it does not seem to take any effort. That amount of energy could just as well be directed toward greater agricultural industry and used in driving some farm machinery and helping to harvest these crops.

But it requires the co-operation of men as well as women. If we could come together and analyze these situations there is no question but that in time we should be able to work together and solve many of these problems that seems to us so immense at this time.

While women are being urged to conserve food, we have a few ideas about the production of food that we are anxious to have the co-operation of you men in, if you can see fit to change some of your ideas as to patriotism and as to what ought to be done now. There is no need to develop new acreage in the West far from transportation, far from the labor market, where the crops harvested last year, it was impossible to ship to the market centers. There is greater need then to intensify our farming in the central district and in the eastern district where we are near to transportation and where we are nearer to the labor market, whatever it may be.

We have in this country manufacturing plants, as they have in Europe, plants that were formerly devoted to the manufacturing of what we call luxuries, that are now being utilized for manufacturing necessities. The

same thing should be done in agriculture. We have a food administration with power to control the production and the distribution of food. That food administration will have power, it seems to me, to go a little bit further. It has the power to prevent the use of wheat in the distillation of spirituous liquors. The question of raising wheat is such a serious one in America at this time, and yet we have 1,369,900 acres of the best soil in the United States devoted to the cultivation of what it seems to a great many of us is a luxury; it is devoted to the cultivation of tobacco.

There are some who will say that the soil cannot be used to raise wheat on. Agricultural experts and scientific farmers tell us that it can. It can be used to raise sugar cane. There are two products greatly needed in this country at this time, and on 1,369,900 acres of land we could measure our increased production in millions of bushels of wheat or in thousand and hundreds of thousands of pounds of sugar cane. That ought to mean something to this country, and if it does, why should we not urge its use at this time?

I sincerely hope that you gentlemen will give some thought to that. I know we women have been laughed at for even advocating the idea, but this is war time. It is a serious proposition, and I cannot see any joke in having that great acreage devoted to the cultivation of what we must class as a luxury. At least it does not seem to me that it is a necessity. If it is, then we women have been missing a lot for a great many years. (Laughter.)

There are so many different kinds of war work that women can do, so many things that they should do and that they want to do to help win this war, that I could stay here and talk all evening, and it is getting so late I must stop. I have just one more thing that I want to speak about, and perhaps it is not so important that it deserves any mention at all. I do wish that you men folks would urge the strong, able-bodied women of your families to stop knitting. Now, we have machinery to do that, and why not utilize the time in some useful way? If you men had to knit your brains would become petrified. That is a fact, and so it will be with women. They should utilize their time about something very much more needed. The soldier would prefer the machine knit goods. Why do we tie up the time of these women in knitting when they ought to be doing something more necessary? Why, it would be as sensible to ask you business men to go back to your offices tomorrow morning and write your letters by hand and discard the typewriter. There is a little sentiment that seems to cling around that home-knit stuff, but you might say the same sentiment would be extended to the hand-written letter, because it was written by hand it would get more attention, although you know very well there are some of you who write so poorly that your correspondents could not read it and they would thank you to use the machine. (Laughter.)

I think you would render a real service if you would do that. When the war started the women were urged to do something and that seemed to be the one thing they could fasten upon and do it with a zeal and energy that expressed their patriotism. That was all right at that time because they were not classified in a way where they could render better service. But today when the nation is calling upon them for services in different capacities, and as I said here a while ago, the government is willing to take these women and train them to do certain kinds of work that they want done, that is the thing that I would like to see the women of America take hold of and help win this war. Not run around in a circle and carry these great knitting bags around and make themselves look old-fashioned and I don't know what all. It does not accomplish anything. It does not get them anything and it is not producing a thing that anybody wants. It is like teaching a dog to play a trick that nobody wants to see him play. I think you can rendered a splendid service if you will do that, and help your women folks to get started into another line.

Women are not used to taking the initiative themselves. You men are. If you will say to them that it is time for them to do something more constructive they will listen to you. That will mean much to women coming from you men. And so the one thought I would like to leave with you is greater co-operation with the women. Give the woman a man's chance. That is what thousands of them are wanting, and once they have had that chance they will respond as women always have. But never having been trained to take the lead, never having been permitted to take the lead in these things, is largely the reason for their backwardness at this time. It certainly is not a lack of willingness on their part, not at all, because they are eager to do the things that are open for them to do, and with your help and co-operation I know, as I said, we will discover America's greatest asset, the undeveloped ability of the women of this country.

I thank you. (Applause.)

THE CHAIRMAN: I realize the hour is getting late, but I want to urge all those who can possibly stay to remain for the next paper. Your time will certainly not be wasted. In our first paper we heard a speaker from the far East, from New York. Miss King represents the central district, Chicago. Our program seems to be well balanced inasmuch as we have for our third speaker a representative of the far West, Mr. Barton T. Bean, of San Francisco, Cal. Mr. Bean is president of Klink, Bean & Company, of San Francisco, public accountants and industrial engineers of that city. He has been very active on the Food Industrial Board of the United States, Food Administration of California, being chairman of that body, volunteering under Ralph C. Merrill, Federal Food Commissioner of California. Mr. Bean will speak to us on "Labor and Price Stabilization by Voluntary Agreement After the War." I take great pleasure in introducing Mr. Bean. (Applause.)

LABOR AND PRICE STABILIZATION BY VOLUNTARY AGREEMENT AFTER THE WAR.

Mr. Chairman, Ladies and Gentlemen: The work of the United States Food Administration among industries dealing in food staples has developed some interesting experiences which may, along the lines of stabilizing prices, effect in the future many startling changes in practices prevailing in pre-war business.

Before the war the inexorable laws of supply and demand made all dealings in food staples and necessities a speculative venture; and while the dealer in such commodities was often able, by reason of his speculative profits, to sell such staples as flour, sugar, etc., at a small advance over the ruling purchase price, it is equally true that his speculative losses approximated, in many instances, his gains, and would have entirely offset them were it not for his normal percentage as an actual dealer.

When Mr. Hoover undertook the problem of food control in this country he was confronted with numerous, serious phases of the situation; among those he faced the task of furnishing our associates in this war with the vast food supplies essential for the fighting forces as well as for the civilian population. Furthermore, he had to devise logical and effective means of stabilizing the prices of the chief food staples, especially flour and sugar, and this in the face of an unparalleled situation as to means and methods of distribution.

I shall not here go into the history of Mr. Hoover's plans and progress in solving these problems. You are all doubtless familiar with his achievements which have been unique and satisfactory. In passing let me say that this would not have been possible without the hearty co-operation of the government, the farmers, the merchants and the entire civic population.

Perhaps no one thing appeared more important at that time than the task of keeping at a minimum the price of bread in this country. The average laboring man uses the price of bread as his yard-stick for the measure of all other values. Therefore, in order that the tranquility of the people might be undisturbed and that wages might be prevented from a never ceasing advance to meet the increasing price of necessities, it was vital that the basic staple food product, wheat, should be controlled and stabilized before vast stores of grain were withdrawn from the country and shipped to foreign ports. If, therefore, the price of wheat was not fixed, it would, under the old laws of supply and demand, have sky-rocketed to unheard-of prices, with resultant chaos. The ultimate effect on the labor problem would be contemplated only with serious concern.

We must bear in mind, however, that the control of this one product required a special act of Congress and that the government was compelled to provide a capital of \$50,000,000 in order to take up all grain offered.

To use this same method for the stabilization of all food products would be obviously out of the question; yet it is vitally important that

such commodities as potatoes, beans, rice, fruits, meats, vegetables, fish, milk, etc., should be kept on a price level in consonance with wages and with the general income of the civic population.

California as a food producer presents a peculiar situation. By reason of the great variety of climate in the different sections as well as the large extent of territory within the state, there is exported more varieties of food and also in greater volume, than from any other state in the union. Organization among all classes of industries has progressed probably to a greater extent than in any other state. This is especially true among the farmers, so that we were provided with at least a good foundation for this interesting experiment.

Another factor was the ability, through co-ordination of the purchasing departments of the army, navy and our associates in the war to practically create a market by the purchase, through this combined agency, of any commodity desired.

The extent of the varied industries and products within the state may be illustrated by mentioning a few such as:

Citrous and Deciduous Fruits.

Wheat, Barley, Beans and Rice.

Dairy Products.

Live Stock, Poultry and Fish.

Sorghum Grains, etc.

We had, therefore, a variety of food staples with the problem of stabilizing the price from producer to distributor.

As a basis for action, the food control bill provided regulations which automatically changed pre-war conditions. These regulations governed future contracts, hoarding, re-sales within trades, rebates, and other abuses that made for indirect additions to cost and that substituted speculation for the primary law of supply and demand.

As a consequence producers, manufacturers, brokers, dealers and those engaged in other lines of activity were more or less unsettled as to future policies. The first reaction, due to the elimination of speculation, made a larger gross profit necessary than in pre-war times. Producers were thrown into confusion because labor and other costs were higher and yet they could not move crops any faster than could be absorbed by the trade, within 30 and 60 day stock limits.

It was not difficult, at this time, to interest these people in any plan that would tend to clearly define the conduct of their future operations during the progress of the war.

As an illustration of the plans adopted I may give a concrete example:

Rice is grown only in a few southern states and in California. It has recently developed into an important food product in this country; particularly so since substitutes for flour are in such great demand (for the purposes of the present example, we will not consider import and export conditions).

The factors in California are:

1. The growers (who plant about 150,000 acres, producing from five hundred to six hundred million pounds of paddy rice a year.)

2. The rice millers (who mill the paddy into head rice, broken rice, rice flour and screenings).

3. The jobbers and brokers.

4. The retailers.

Up to this time we have not considered labor and expense factors, taking for our purposes existing conditions as a basis for determining profits. Considering the first factor—the growers: An organization was already in existence styled “The Pacific Rice Growers Association,” controlling a large proportion of the acreage. The members of this organization were called together that we might ascertain what price would enable them to continue production. It was finally determined that 4 cents a pound would be regarded by all as a fair price on the basis of number one grade.

The millers were next called in and it was finally agreed with them that a profit of 50 cents per sack for head rice and certain maximum prices for by-products, which made the total price of 7 cents for head rice, 6 cents for rice flour, 4 cents for broken rice, etc., would give a fair return on the investment of a normal plant.

It was therefore voluntarily agreed between the growers and the millers that each would furnish a grader, and that if they could not agree, the Food Administration would settle all differences.

Under this arrangement the millers purchased from the growers direct all paddy rice and apportioned it among the millers on a basis of milling capacity.

Through the Wholesale Grocers' Association and the Retail Grocers' Associations it was voluntarily agreed that if the former could buy head rice at a maximum of 7 cents; they would sell it to retailers at not to exceed 8 cents and the retailers were to sell it to the consumer at not to exceed 10 cents.

All state food administrators were notified of these agreements so that they could enter into similar plans with their wholesalers and retailers. The result is that the price of California rice in every part of the United States is now 10 cents, plus freight.

The same plan was adopted and worked out with respect to beans; growers receive 8 cents; dealers, 8½ cents; wholesalers, 9½ cents; retailers, 11 cents, and these prices are uniform all over the United States.

By controlling imports domestic supplies can be resorted to first and thereafter recourse can be had to imports.

To me the most surprising development in the matter was the satisfaction these plans gave to the growers. Their attitude was well expressed by one of their number, who stated in substance as follows regarding his bean crop:

“I don't worry now that someone is going to make a big profit on my beans and I am not afraid any more that my neighbor will get more than I do.”

The dealers and growers are now in accord and the dealers treat the growers fairly. The dealers realize how easily the growers could do their own marketing by reason of their organization. They are prompted, therefore, to keep their service charge upon the lowest possible basis and the

price allowed gives a reasonable return on the investment required for a normal turnover.

As soon as this plan was in operation the price of beans fell from 15 cents and 16 cents to a stabilized price of 11 cents, to the great gratification of the public. Similar plans are gradually being worked out for all food staples in California and there will be no question about its expediency during the war period, where co-operation is assured by reason of the patriotism of all concerned and further promoted by government purchases which tend to establish a market basis.

The thought which I desire to bring before this body of economic thinkers is the feasibility of effecting labor and price stabilization after the war by combining proper legislation with governmental administration of some such character as is represented now by the Federal Trade Commission.

In this endeavor there should be organized under this commission:

1. Control of imports and exports of commodities to be stabilized.
2. Labor, in all its various classifications, affecting such commodities.
3. Producers of food staples and necessities.
4. Manufacturers.
5. Brokers, jobbers, etc.
6. Retailers.

There could then be published, officially, consumers' maximum prices for all such foods and necessities. This of itself would tend to tranquility of mind on the part of the people and would go further, it appears to me, than anything else towards the elimination of such uneasiness and restlessness as are reflected in the activities of the I. W. W. and similar unworthies.

Granting that many former conditions of business will be changed after the war, is it conceivable that we will not endeavor to correct the old practices prevailing in pre-war times in the handling and distributing of food staples and other necessities?

Let us look at the results achieved under the working of the supposed law of supply and demand. Take any food staple. The buyer or dealer always worked with the one object in view, of securing a primary crop at as far below cost of production as circumstances permitted and, in many cases manipulations of various kinds made it possible to secure from the producer the product of his labor very close indeed to actual cost, if not below.

The producer was injured by this method. He could not pay his debts nor make heavy purchases of either necessities or luxuries, which, were it possible, would make prosperous a never-ending chain of prosperous people.

Now what happens to the middleman who has made his bargain? Does he at once hand on to the consumer his good buy? Hardly. He resells to a speculator or another dealer and so it goes through, perhaps, four to ten hands before it finally reaches the consumer. The consumer, by this time, is paying a high price which, if given to the producer in

fair part would have made him extremely prosperous, able to pay high wages and become a free purchaser himself. But as it is, for the excessive profit of a few middlemen and speculators, the ultimate consumer, the producer and laborer stand all the traffic will bear.

Now we know this can be changed for the better. By eliminating speculation, hoarding, resales within the trades and insisting on products moving in a direct line always—we can pay the producer enough to keep him in business—the necessary middleman a sure profit—and the consumer will then pay less on the average than now; in fact, a great deal less. Such government control and stabilization of prices would seem to indicate a necessity for government control of all food storage and warehouse plants to the end that the producer could at the close of the season deliver his crops to the government warehouse and take proper warehouse receipt, which would be bankable paper, and in so far as the producer was concerned, he would have received pay for his product at a known seasonal stabilized price. Does this result not justify the simple legislation required? It has been done and is being done more and more with constantly increasing success as experience points the way. Will the people stand for the old way again?

Ladies and gentlemen, the people of this world are changing their ideas rapidly during these times and many conditions will never return to the old basis. If we do not change some of these ourselves they may, perhaps, be changed for us; so let us keep on open mind even to what may seem to be very radical innovations.

With this in mind I do not believe I am proposing a plan that is not in line with a common-sense system of distribution that should be standardized after the war for all primary staples.

What I wish to bring also to your attention is that in California (almost alone of the states) there are organizations of producers, as for instance, the orange growers, the rice growers, the raisin growers, the bean growers, and many others. These organizations, by control of the major portion of the products in their respective lines, secure for their member producers fair prices for such products, making the industry profitable to the individual producer. In some instances, such as the orange growers, they provide uniform distribution to all markets throughout the states and effectually eliminate waste in glutted markets and extortionate prices in famine spots.

The history and experiences of these organizations have proven and are proving their economic soundness, not only from the viewpoint of the producer, but the consumer as well, and they point unerringly to a logical extension of the plan to all food staples, which under government regulation and price stabilization all along the line shall secure fair profits to producers, middlemen and transportation agencies, and above all, fair prices to consumers, effectually eliminating the element of speculation.

In closing I hope that the suggestions given here will lead some of the practical minds to work out in the near future a simple plan that will make stabilization of prices and wages a standard practice, at least for all food staples and other prime necessities.

On motion the meeting adjourned.

THIRD SESSION.

Thursday morning, March 28, 1918.

ROUND TABLE DISCUSSION.

"WOMEN IN INDUSTRY."

The meeting was called to order at ten o'clock by the chairman, Mr. W. S. MacArthur, of Armour & Company, Chicago.

THE CHAIRMAN: The program states that this round table conference is to be devoted to the question of "Women in Industry." We are perfectly at liberty to bring up any phase of this question that we have had on our minds, and no doubt each one of you have had some problem to confront and have found a way of settling it. Several who were to be here this morning sent word that they had things they wanted to discuss, and when I heard what they were I was very glad indeed that those subjects were to be brought up.

For the last five or six months my time has been almost entirely taken up with government work, and I have scarcely been at home one day out of two months. Upon returning here a couple of weeks ago when Mr. Dent spoke to me about this conference this morning I told him that I had certain things that I wanted to bring up and no sooner had I told him that I would be here than Uncle Sam wired and I had to leave. I just got back yesterday morning, so that prevented me from getting together and bringing here this morning the facts that I had gathered in visiting the different camps around the United States and during the time that I was working in the War Department in Washington on this very subject.

One of the great problems that confronted Armour & Company, whom I represent, was the possibility, in fact the absolute knowledge, that a large majority of our force composed of young men of selective draft age would be taken away from us, and possibly we were among the first in the country to employ large numbers of women and put them on what we termed an educational roll. We did that for the purpose of breaking them into work which we knew we would have to give them when some of these positions were vacated. Notwithstanding all our advertisements and the alluring things that we hold out to the women to come and work for us, it was surprising how few responses we received, and when we did get them to come in and talked with them we found that in a great many cases they had not been fitted by their previous experience in business to handle to work that the men had been doing. The trouble was that there were so many men in this country that the question of employing women except for very minor positions had not been given any consideration whatever. I am speaking of them as a whole. That does not apply to all by any means, because we have found some extremely capable, but they are the exceptions and not the rule. The result was that we had to take the brightest that we could get hold of and give them a regular educational course along accounting and other lines in order to fit them for the positions we wanted to put them into. The result for the last year and a half has been very satisfactory and

we are rapidly replacing the young men who are gone and are still going, with these women. They are doing their work exceptionally well. I am speaking of the office now. We had previously employed a very few women in the plant, but in the office those that we employed were in purely stenographic positions. To change suddenly and put in so many more women made it necessary to change our office building. We had not the accommodations for the women. We had to devise additional locker room, we had to provide additional restaurant space for them, because we let them go to a separate restaurant from the men. We had to provide a nurse, sick room and arrange to give them certain time off during the day, especially the comptometer operators, who are under a great strain from the position in which they are constantly using their hands. We had to have a doctor right close by where he could keep track of these different girls and follow them up. We had to have a visiting nurse. And the result has been that within the last two months we had had to draw plans for the enlargement of our building, that for one floor alone to accommodate the women is costing us \$250,000.

That is the difference that the employment of women has made in one particular item in our office. Naturally owing to the war we have been employing a good many more people. We have just about twice as many in our office now as we had a year and a half ago. That is not only true with us, but it is true with everyone else that I have come in contact with, and especially through the East where so many men have been taken out. I think they notice it more there than they have done in the West, and they are employing women, too, to a very large extent.

In going around the camps, especially through the South and East, the question came up about employing women in a number of positions, clerical positions, where the young men are leaving, that is, the enlisted men. The government has a good many field clerks, as it calls them, who are really civilians come under military rule, wear the uniform, but they are paid civilian salaries. We found in a number of instances that the young men who were enlisted and detailed to work alongside of these field clerks objected because they felt that they were being discriminated against. They did not like to perform the same work, sometimes better than the man who was next to them and who was a field clerk, and they get their thirty dollars a month while the field clerks got their one hundred and twenty-five. I do not blame them. We found that true in setting-up and ordnance repair shops, where the men would absolutely refuse to do the work. They would do it in a way that you could not get after them and court-martial them for it, but nevertheless they refused to do it. We could not blame them. The problem was taken to Washington and it was finally decided that so far as the division headquarters were concerned where the women could be brought together in one building and given proper quarters, properly supervised, that they would employ women wherever it was possible and release the men for active military duty. A committee has been appointed by the direction of the Secretary of War and the plans are now being worked out by which that can be accomplished in every camp in the United States.

Another phase of the question was dealing with the educational in-

stitutions and this committee was formed in Washington, working under the direction of the Adjutant General's department, and certain courses were provided in different educational institutions throughout the country, usually of about ninety days, that would fit, not only the men but the girl students for definite positions in the service. The women have positions in the department at Washington, and the government is advertising all over the country for girls to take those places, for they have, of course, been compelled to employ thousands and thousands of people there. I understand that the population of Washington has increased one hundred thousand within the last twelve months. It is almost impossible to find accommodations. Wherever these girls accept the positions they are trying to follow out the English idea of providing boarding-houses and places for them before they arrive, so that they will be properly taken care of, and the government feels that it is morally responsible for them, and it is, of course. They have gone even so far as to employ girls in the navy, and they have a definite regulation uniform that is provided. It is astonishing how well they are performing their work.

These are only two or three of the things that have suggested themselves to me in regard to the employment of women, and now that the conference is open here for discussion we would like to hear from each one who has particular problems, as to how he has solved them.

A paper has been handed to me, sent in by Mr. J. P. Brophy, Cleveland Automatic Machine Co., Cleveland, Ohio, which presents the other side of the subject, and as it will only take two or three minutes to read it, and I suggested to Mr. Dent that we might hear it so that we would get Mr. Brophy's ideas.

WOMEN IN OUR FACTORIES

One of the all important questions of the day on account of the war, which is something that we read constantly in the papers and is under discussion by a great many people is, women in our factories to take the place of men.

It is true that in England and France a vast number of women are employed operating machines of different kinds in factories of all descriptions, turning out war material, but it will be well to remember that England and France have been in the war for three and a half years and that nearly everyone of their populations is either a soldier or producing something for war purposes, but that's no criterion that we should lose our heads over here on this question, and consider that it is great patriotism to have in mind the using of women in shops of all kinds.

The facts are, we are liable to go to the extremes in this country without really giving the matter serious thought.

It is not patriotism to employ women in your shop, excepting the time has arrived when it is absolutely necessary, and we are a long way from this time at present. Here we have 110,000,000 people, and the time is far distant when we will have 2,000,000 men at the front. That's a very small per cent of our population.

Women have been employed in shops for a great number of years—that must be admitted—and in many instances they are employed when it should not have occurred. The mighty dollar, of course, was upper-

most in their minds, and this I suppose is excusable to a certain extent, but this condition should not be encouraged.

The facts are, if you step into a manufacturing plant of any kind where parts are made for war purposes, and see a vast number of women in overalls standing side by side with men, you get it into your mind possibly that this is real patriotism, but in the estimation of the writer the idea of women taking such jobs, is because they can obtain exceptionally high wages, and the employers of such women are carried away with the thought that they are great patriots.

If you study this question while you are passing through such a plant, you should feel in your mind that women with a pair of overalls on mixed up with a lot of men in a shop of any kind, is out of place in the extreme if it can be avoided. The real nicety of the feminine sex is being disturbed.

We all have great respect for our wives, mothers and daughters, etc., etc., and would not tolerate their working in a machine shop, but some of us are delighted to give positions to other women, and have everyone believe we have the government in mind. That is what I would call double thinking, but always deciding in our own favor. In the writer's way of thinking, there is plenty of other work for women while this war is on where they can do a vast amount of good outside of a shop. This has been proven times innumerable since the war commenced. Anything that disturbs that which is feminine in a woman is bound to react, and where a woman stands up to a machine of any kind, working the same as a man, mixed in with men of all kinds, remarks are bound to be passed about her that are not very complimentary to her sex.

A woman that takes a man's job who might be working isolated completely from the men, would be another story, having a separate entrance, going to work at a different hour and leaving before the men, completely separating them. This would seem the most feasible, if this thing has got to be because of the war, but you will hear it said in many instances, "I have been in such and such a shop. I saw a vast number of women running machines and working on benches, putting parts of ammunition together, right in the midst of a great number of men, and they do their work just as well as the men do." This sounds all right from a commercial viewpoint, but it sounds all wrong from the viewpoint of exhausting our force of men before using the women.

It makes no particular difference what they are doing abroad, because at all times women in foreign countries have never been respected by men anything like they have in the United States. In many countries they are slaves to the men in every way possible. The United States is supposed to be the enlightened nation, caring at all times to protect the gentler sex, and the first thing we find out when there is a war on, is that many will be over-anxious to obtain women to work in their factories. I would not say from a standpoint of making any more money out of them, but a great many seem to like to be able to say they have fifty or one hundred women in their shop doing just as well as the men.

This does not cover the point. We have an abundance of men over here at this time and will have for some time to come. There is no justification in being too rapid in our conclusions in our hiring women. Men are intended for such work, and always will be. The man is supposed to

be the toiler and go out into the public in any kind of a position and earn a livelihood for those at home.

The home is the real sacred place for women, when you get right down to real facts, and they are used in thousands of different industries, but they should not be used beside a man in a factory, if it can be averted.

The dirty jobs in factories that women are now doing belong to the men, and there is no question about it. When you disrupt in any way the tender feeling that exists between the sexes, you are damaging to a great extent their future relations towards one another.

In the first place, no woman can work in a shop with men and retain that something demure, which should be a natural part of her, that is demanded at all times. She is bound to hear language that is disrespectful, and there is no question about it. This means, associating with the ordinary man in the shop is all wrong from an American viewpoint.

The facts are, it would be better for this country if it were never necessary to have women go out and toil for a living. The only salvation of our nation is the home, and this cannot be questioned.

Circumstances in many instances, of course, change all things, and this is why we have so many women employed now in different classes of work; but there is a great difference between one kind of work and another when you make the real comparison; that is, in the associations of men and women, that when you think of a number of young women working in a factory, there is a certain amount of the nicety of the feminine sex lost, and this unquestionably has a damaging effect.

I contend that the woman should be kept in her proper sphere, and when the time arrives, if it ever does because of this war being an extended one, that women have got to be used in factories, then let it be done without any hesitation.

The government should have complete control of a situation like this. Each municipality should have a list of all the men that are able to work, and they should be watched closely to see that they are employed and not walking the street, where you will find thousands of them daily. Loafers, I would call them. The municipality should also have a report on whether these men are working steadily, as there is an immense loss in every place of business where a great number of employees are in the habit of losing considerable time. When you are getting right down to the war, follow the men to the extreme before you attempt to think about the women.

If men persist in loafing the streets, jail them or find some occupation where they have got to work for the government while the war lasts.

Women employed in shops, receiving as much wages as men, is going to be extremely detrimental when the war is over, for the reason that it creates a false independence for the time being. It may have a tendency to retard marriage considerably in the future.

All these things should be considered very seriously before the manufacturers are even allowed to have women in their factories.

This is a case of where patriotism is abused. The real meaning of the word is not uppermost in the mind of a great many men when they are doing things that have a bad effect on the nation.

Imagine the vast multitude of things that can be done by women out-

side of shops. For instance, they might act as shipping clerks to great advantage and do all the shipping independent of the men. All men employed in stores of every description can be replaced by women, and there are thousands of them in every city. A proper investigation of this matter would easily prove my contention.

It is as necessary to protect our women as it is to protect our country from a posterity point of view. It is not intended to convey the meaning that women in general are weaklings, but when they do a man's work and receive a man's pay for such work and mingle with men daily side by side in a factory, they are considered by the men to be somewhat unsexed.

The fine feeling of a man for a woman in such cases is radically changed, and it demoralizes the thought that a woman is superior because she is a woman, and consequently lessens rather than increases the tender feeling a man should have for women, and this is bound to have its effect when the war is over.

Many women who apply for positions in munition factories are driven to it because the man or men at home desire it. They have no respect for their own families, which makes it easy for such men to find fault with their employers and quit the job, and the women actually take their places.

There is no question but what we are lax in this respect in the extreme.

It will be understood, of course, that with a population of 110,000,000 which is more than the population of England and France combined, where we are preparing about a million and a half men for the war, which is an exceptionally low per cent, as they come from all over the country, that at this time it should not be necessary to be finding employment for women to do men's work in shops, when unquestionably we have plenty of men, if they were made to do their duty, to fill up the gap where we are short of help, and leave the women remain at home or find occupations more dignified that would not have the bad after effects.

If plainer language were used, it would strengthen this article from the viewpoint of real facts, and possibly would shock the skeptical reader. Nevertheless the question of too close intimacy of the sexes where the woman is doing a man's work in overalls, mingling together daily, is an abhorrent thought and damaging in the fullest sense of the word, when considering the pitfalls that such associations encourage, and deserves the severest condemnation, and the government is master of the situation.

THE CHAIRMAN: Now the conference is open for discussion. If that does not start something right away I will lose my guess. Do not all speak at once.

MR. DWIGHT T. FARNHAM (St. Louis, Mo.): Mr. Chairman, ladies and gentlemen: Before discussing this paper I would like to say a word here in regard to investigation. There is such a great deal of opinion expressed in regard to a great many of these questions that I think it is necessary to say a word about the real method which has been advocated and which is in use by the best sort of industrial engineers. That is, laying all the facts out on the table, sorting them over and letting the facts themselves form the opinion, rather than securing the opinion in some other way. We had occasion not very long ago to investigate this matter of the employment of women for a client.

The district where we made this investigation was near St. Louis, including St. Louis, and the conclusion that we reached after spending some time in the investigation was so near Mr. Knoepfel's findings that I thought possibly a word about it here might be of interest.

The method which we employed was to visit as many industries as we could in that district and determine in the first place what the women were being used for. This particular industry we were interested in was mainly moderate heavy work with a small part of it very light work. We went to all of the industries that we thought might be using women for moderately heavy work. We went to the packing houses, we went to certain clay product plants, we went to the tobacco factories, and in no case did we find women doing very heavy work, not as heavy work as we had contemplated using them on. We believed perhaps after we had made this investigation that thirty per cent of the work in this particular industry could be done by women. Then the question arose as to whether or not we should try out women in this industry. Our conclusion was that it was better not to do it; that the local fashion was against women doing the heavier sort of work; that enough men had not gone away to create a sufficient vacuum so that the flow of women into the industry could be accomplished without friction of one sort or another.

Of course, when we get to the point at which Scotland is now, when they have sent something like nine hundred thousand men out of five million population, when we have sent twenty million men abroad, we are going to have a vacuum that is going to bring the women in without protest from anybody. I do not mean the sort of protest of the anti-suffragists, or some man who gets up, as a woman expressed it once, and wants to see that woman is on a pedestal or else chained to a cook stove. That is what I mean by the spirit of the anti-suffragists, but that is not the kind of protest that I am talking about now. What I mean can be illustrated by the condition we had on the Pacific Coast in regard to the Japanese. There was no feeling against the Japanese unless a Jap took a job away from a white man, but as soon as a Jap took a job away from a white man there was a fight. But as long as this vacuum was evident to everybody concerned there was no trouble.

This investigation that I told you about was made several months ago, and we concluded, as Mr. Knoepfel did, that the time was not yet ripe; that it was a good thing to get ready for and get the conditions in the factories ready for, but if we went out and tried to drag women into these industries we would get into trouble.

That has been illustrated very beautifully recently. The traction company in St. Louis tried to do it, but they went too fast. They put on twenty or thirty women conductors, and that amused the men for a while. But after a little time the men began to complain because the favorite runs were given to the women. I won't go into that in detail, but the consequence was that everybody in St. Louis walked for a week. That is one of the dangers in forcing women in too fast. If you wait until the need is created, until we have so many men out that it is evident to the men who are in that the women are absolutely needed and essential, I believe that it will come without very much trouble. But when you begin to force anything it is like forcible feeding—it causes indigestion. (Applause.)

MRS. M. D. BRADLEY (Rothschild & Company, Chicago): You men are so in the habit of settling things for us women that you have taken this question and studied it from your point of view, but it does not seem fair to me that you should be allowed to go on without having at least one woman's side of the question.

It does not seem credible that in this day and age anybody could express the sentiment that the paper of Mr. Brophy's contains. At least we women who work have almost forgotten that there are men who have thought like that. But it seems to me that in the report of the questionnaire last night, which was very comprehensive as far as the one side of the question was concerned, that you ought to take into consideration the other side of the question. It is a fact that there are women in industry now and that there are going to be a lot more women in industry, whether you like it or not, and that after the war you will have to consider women in industry. Maybe you think this is beside the mark, and perhaps it is, but at any rate efficiency engineers ought to be forewarned.

You know after the war, perhaps within the next year, you are going to realize what some of us who hear the stories of women and who know about the employment of women are realizing already. I am the educational director of a large retail department store. I do not employ the women but I talk to them before they go to work, and I hear this as often as anything else: "No, I never worked before but my only son has been drafted and I have to do something." "No, I never worked before but my husband has gone to war and I have to work now." We will hear that a lot more before we are through with this war, so whether you like it or not you have got to get ready for women in industry, and it seems to me that some of the time that is now used in discussing whether you need women or not and whether you will use women or not, might be devoted to the other side of the question—that many women need jobs and must be provided with the means of earning a living.

It is all very well to talk about not putting them in the factory, and maintaining those high standards of chivalry, but the fact remains that there are a good many women who never have been asked to marry—I am Mrs. Bradley and have two children (laughter)—and then there are a lot of women who are widows and must be taken care of, and there are lots of women who through one set of circumstances or another have no chivalrous men to keep them in their place in the home.

Of course, it is a trite statement to women who think anything about these things, and I should not have to remind you of that, but it is true that women must work, and the department stores cannot take care of all of them. We have been accustomed to think that we could, but we cannot, and you will have to find places for women in your work, whether you like it or not.

And then it seems to me that we have all forgotten the fact that if we are not going to use made-in-Germany goods we are going to have so many new industries in this country that you will be able to use not only all your left-over men, but women who need jobs after the war. (Applause.)

THE CHAIRMAN: I think Mrs. Bradley is right. It is not a question of whether we are going to employ women, but it is a question of how we are going to employ them.

MISS MARY McDOWELL (Woman's Industrial Committee of the National Council of Defense): Mr. Chairman: I heard Mr. Knoeppel's paper last night, and went away feeling very much cheered and encouraged. I felt meeting you here, these industrial engineers, that you were the group of men, perhaps, who would take this matter under consideration, even as we women could not quite, and I felt very much encouraged. I thought that paper was so scientific, so sane and altogether so wholesome. I hope there are a great many to be sent through the country.

This question is not a matter of suffrage or anti-suffrage. It is not a matter of whether gentlemen are chivalrous or not chivalrous. That is all past, it seems to me. According to the census we now have over eight million in gainful occupations. We have already millions of women in industry. So it is not a question of whether men like it or not, nor a question of whether any of us like it or not. The whole question, it seems to me, was well put last night. We must be prepared for that which is surely to come, in either a small degree or a large degree.

There is no doubt about it, the railroads have been testing and trying out the women. They have put them on, I have seen them with my own eyes, filling the places of men. Whether it is necessary or not I am not arguing. I thought in many places it was simply a question of a few more cents or a few less cents. We know perfectly well that women have always been cheap labor, and if we want to protect women and protect men and protect industry, women must cease being cheap labor, and if that can be brought about in some way then I feel that we will have secured something that will protect all of us. There is no doubt about it. I do not mind the chivalrous gentleman who talks like the old-fashioned man. Maybe he is a very good person to have around once in a while, because we need to protect women. They are not organized as men are. They need to be protected somewhat.

I found in the railroads that they were discussing putting women on as freight handlers. The question was brought very close to me in Chicago. One company proposed to put them on as freight handlers, but before doing it, like good American men, they asked the women in Chicago whether it was advisable to do it, and the women fortunately of the Woman's Industrial Committee took the matter up and went very thoroughly into it and tried to handle the freight themselves, and tried to have some husky athletic college women handle the freight, and then they asked the opinion of the best gynecologists in Chicago as to what the effect would be on a woman of handling freight over twenty-five pounds and up to a hundred and twenty-five pounds continuously for over eight hours a day, and the opinions were all very strongly against it. So a letter was written to the president of the company, and the president agreed with us, I am glad to say, that he believed it was too great a risk to run with the women, and he did not believe that in America we ought to put the women on the level of the European women. That sounded very good.

The women of the Council of National Defense and also of the state have a set of standards for government work. All those standards were held up and discussed in the paper last night so much better than I can do that I will only mention them. There are regulations against tenement house work, against child labor, for the protection of mothers before and

after childbirth, regulations on the question of wages, hours of work, seats for women, extra heavy and hazardous occupations, heavy lifting, exposure to heat and cold. Those are a few of the subjects taken up by that committee.

General Joffre said that if the women of France and England for twenty minutes stopped work the cause of the allies could not be won. We have not got to that point yet, I agree, but I see so many indications that we may get there, I see so many places where women are being put on because they are just a few cents cheaper, that it is time for the subject to be considered. To be sure, they are getting larger wages in some places, and I believe that those are the places that we must watch very carefully, to see that they are getting the wages that the men would get now; not what the men went out on.

I found in Cleveland, as I found in Chicago, that the women were getting the wages that the men had when they left, and not the wages that the men would have if they came back now. That may be the only thing that can be done, but I feel that if we could establish that higher wage for the women that we would protect the women very much.

I am so glad that you have taken up this serious matter for discussion, because you are the type of men who will have great influence in bringing about protective conditions in factories for women. (Applause.)

MISS BENNETT (Collegiate Bureau of Occupations, Chicago): I would like to say just a few words about what the women themselves are going to try to do to meet this emergency in the way of really earning equal pay. I think that one thing the women are especially interested in is not only in asking for equal pay for equal work, but in assuring the men that they intend to give equal work for equal pay.

There is a feeling very often that women are coming into this industrial game in larger numbers and expecting to get the wages of men while not delivering the work which men have been delivering. If you talk to any large group of thinking women, any large group of hard-working women, I think you will find they all agree on this one thing, that it is essential that women give equal work for equal pay, and there is a great movement not only, as you realize better than I do, in industrial firms to train women, but among women themselves, to secure and regulate and organize such training, that women coming into your factories and into your shops and into your offices and into your organizations of every kind, will be able to give this equal work for equal pay.

That is the thing that we want to do particularly. We want to prove to you that if you take women on in larger numbers you are taking on a good industrial risk and a good industrial investment; and with that goes the admission which I think we are all perfectly willing to make that there are a great many places in which woman labor is not desirable. I was interested to hear Miss McDowell speak of the investigation in regard to the railroads. There are other places where woman's labor is not good labor. It is not labor which can be measured by its muscular value at times, and there is certain labor which must be measured, of course, by its muscular push and muscular force. Those are not the divisions of work in which we think women can be of the greatest service. We want to put

our groups of women in where they can do good work and where their work will be needed.

There is, of course, a tendency of employers to take on women because they are cheap, and in regard to the paper which you read, Mr. Chairman, and which we all enjoyed very much—it was highly entertaining—that paper spoke of people taking on women because it sounds patriotic to say you have a lot of women working for you, but the fact remains that there are many places where you need woman labor on just the type of work that women can do, and this great army of women, let me tell you, gentlemen, intend to train and educate themselves so that they can go in and do this work well and satisfactorily. And so when you have taken on women labor and have given them equal pay for equal work, you are going to get from them equal work for equal pay. (Applause.)

MR. FORREST CRISSEY (Saturday Evening Post): If this is a testimony meeting, I just want to add something to what Miss Bennett has said. After nosing around among the munition factories in the East I came back with quite a new set of impressions in regard to women as workers. Just for example, I was talking with the manager of one of the big munition factories in New Jersey and I said, "How about the work that women give you?" And he said, "Why, there is not any use talking about it because if I would tell you the truth no one would believe it. If you published what I said you would be laughed at all over the country, and it would appear perfectly absurd." "Well," I said, "for instance?" "All right," he said, "for instance. I will show you a girl if you like who was put on a job handled for a long time by a man who thought he was some considerable expert, and that it was going to be quite a little job for the foreman to find anyone who would fill his shoes." As I remember it, this man said that the woman had been on this job when we were talking something like two or three months, but he said, "She is producing an average of six times what the man produced, and just exactly as good work, because it all has to pass careful inspection."

I have no reason to question this man's statement, particularly as he seemed to have a very keen realization of how sensational the fact that he gave was, and how it would probably be received by the general public.

As to the general responses that I got, they were that women were giving one hundred per cent for their wages. Miss Bennett said that the women were going to train themselves, and right there is a point. According to the testimony of the superintendents and the men in these munition works, and the other places where the work is more or less highly fabricated—I think I have heard some industrial engineer use the word—but their testimony was this, that the woman's intuition gives her a short cut on the job. She just arrives there by intuition without all the long apprenticeship. She has an asset in that that the average man has not, according to these men. Then there is a natural manual dexterity that she has that these superintendents, foremen and managers with whom I talked laid considerable emphasis on. She can just make her fingers behave, while the man fumbles and bungles. That is, of course, using an extreme for the sake of illustration. But on the average they seemed to think that that was the thing that worked out, and as a general rule the women would deliver the goods on a very much shorter training or apprenticeship, and

that there were many temperamental reasons why the women were on the job to an extent that the average male workman was not.

I had not any intention of getting into this discussion, being a rank outsider, but I just wanted to add a little testimony to what Miss Bennett said. (Applause.)

THE CHAIRMAN: We are very glad that you did. I think that is right in line with the bulletins issued by the British War Department. While they have not given any figures so far as I know along that line, they constantly bear testimony to the fact that the work of the women in the various factories there is in many instances far ahead of anything they have ever had turned out by the men.

MR. L. S. ROBINSON (President of Robinson Findex Company, San Francisco): You might classify me as being a man who was prejudiced against women in business, but I am introducing a mechanical office outfit which appears to be complicated, and we have found that women have taken to it much more kindly than men.

We have a farmer's wife who has boys at the front, and she has charge of twenty-five girls handling seventy-five thousand names in San Francisco for collection for the coming Liberty Loan. This woman, who has never had any office experience whatever, is absolutely ruling the office, and the committee of one thousand, which is composed of leading business men in San Francisco, has given her absolute authority over those records. That is one case.

I have also three or four cases of the same kind which bring out a point in this question. If new methods and new devices such as must grow out of such a conference as this are to be introduced, if you have a new, open-minded class who are not tied up by tradition and habits of the old methods, you have an opportunity to fit in the new class to these new methods. We have had the most agreeable instances of this. We all know the old story that is so often heard, "Well, we never did it that way." We don't find that prejudice on the part of women coming in. They are willing to try things.

Another observation which may be a little apart from the subject, but it is proper in this conference. I am in the manufacture of a dental specialty which is sold all over the world. I had a contract partly closed with the largest dental jobbing concern in London, and I had a letter from them stating that the contract would not be renewed for the next ten years for the reason that after the close of the war, "We figure that the balance of exchange will be so in favor of Germany that neutral countries will buy from Germany in preference to any other country, and therefore, as your specialty is manufactured in the United States we would not undertake to enter into any contracts which would bind us to buy from you."

That is something I have not heard discussed here, but it is a very significant thing. In fact, that letter is of sufficient importance to be brought here and read in some session of this conference. I would like to have that letter discussed by the men who are here.

THE CHAIRMAN: I think at some other session of the convention it will be well for Mr. Dent to bring that up.

MISS M. E. HOAGLAND (Diamond Chain and Manufacturing Company, Indianapolis): For two years I have been studying this problem of woman's labor from the inside of a manufacturing plant. Many of the things that I brought to that factory in experience have been worked out in actual practice in my dealings with the women. I have gone through the different stages in the manufacturing and learned of things that were needed for women. I have refrained from making any announcements of what we were doing until I was rather certain of the ground on which we were standing.

It seems to me as we come to this discussion that we need the viewpoint of the women who are doing these things in manufacturing, in offices, as well as that of men. I do not think women alone can decide these questions. I think we need to discuss them together. As we were brought up in homes together to discuss our family affairs I believe that it is time that women and men working together should solve some of these questions.

One of the things that we brought out in that paper of Mr. Brophy's was that was read by the chairman was that women lose something by working side by side with men. I beg to differ with him, and I have the two years' experience to back up my viewpoint. Women lose a little bit, perhaps, of that peachbloom that men seem to prefer in certain types of women, but they gain so much more in their loyalty, their honest purpose, that it seems to me that we would not wish to exchange what we have lost for what we have gained. Women in labor of that sort are not different from other women. They are just as feminine, they are just as likely to be married from the factory, and they are then in a position to have greater opportunities to meet men of their choice. And when men and women work side by side, desire to spend their future together, we have greater hope for them making a successful marriage. They both come to it from the viewpoint of honest labor. There is very little of the frivolous that comes into a manufacturing plant. We do have leisure moments, but let us remember that all labor is honorable, that the women who are coming down from their parlors to the factory do not lose caste. There is no class to lose in that case. Do not let us set the women in the factory and the women in the fashionable districts apart. They are all women, and womanly women.

Let me emphasize that, because we do not wish our women to become mannish, and we do not put them into overalls because it seems patriotic and because it is a rather spectacular thing to do. We put them into overalls because working near dangerous machinery they are less liable to injury, and that is the only reason that men should ever put women into overalls. I do not agree with the idea of the plant in Indianapolis that is putting their office women in overalls because their factory women are in overalls. The office women are not doing the kind of work that requires overalls. It seems to me that we should make some differentiation there. If women wish to enter some certain employment it seems to me a good reason why they should be given that employment. I do not think that any set of human folks should say that another set should do or should not do a certain number of things. I think that it is for women them-

selves to work out their own destiny, and I am glad to say that though I was raised in an old-fashioned home that my father was new-fashioned enough to think that his daughters could do anything that they wished to undertake. And that is my attitude towards it.

Last night one of the speakers was saying that women should not be trained from educational occupations into industry. Why not let the women decide that? If a woman does not like teaching why should she be confined to that part of labor that seems to have fallen to her lot because it was the easiest, it was the least line of resistance?

I made a memorandum of some of the types of women that come into our factory for employment, women who have been deserted by men, who have been left with children to support; we have a large number of those women. We have the widows, and just now we are meeting this problem of sisters whose brothers have gone to war, and they do not lose that demure manner that was alluded to by coming into a manufacturing plant.

For some weeks a group of women have been taking up the questions that will surround women in the preparation for the war. We have made a questionnaire for Indiana that just came to me by special delivery this morning, a revised copy, and one of the questions we have asked there was, "Where women excel in dexterity of hand and quickness of movement, is higher allowance made in computing their wage rate?"

That, it seems to me, is one of the vital things that we need to consider.

Then there is the danger to women of speeding up. We heard Mr. Miles not long ago in Indianapolis, and he told us of some of the remarkable things that had occurred in British factories in which the women were doing fourteen times as much as a man that thought he was an expert at his job. But there is great danger there. Women are eager, they are alert, but we should not sap in one year's time that energy because a woman is a willing worker in that direction. We should hold her back in the traces rather than allow her to push the limit of her strength.

As to this matter of working side by side with men, I wish some men sometimes would take up that matter of crowding in street cars and see if that is not much more objectionable from the viewpoint of contact than is the standing with proper space between them at the machine.

This whole question is so big and I get so wrought up about it that I feel this way, that a stage coach is very picturesque, but not many of us would want to go back to the stage coach days.. That, it seems to me, is this whole question. Women are here to take up the jobs that they are most needed to perform. If you do not need us and we do not want to go in, we will stay out. But if we are needed we will go just there and sometimes we will endeavor to show that we are needed where we have not been convinced of the fact.

I am very much pleased to hear Miss McDowell say that she is going to safeguard against women being brakemen and all that. (Applause.)

THE CHAIRMAN: After all, I am a very firm believer in the common sense of the average American, and I think that through all this question and all its phases that the point that Miss McDowell brought out about the safeguarding of women will work itself out in the proper shape, because the vast majority of people in this country have good, sound com-

mon sense and they are not going to allow the women to take up work that the men and the public generally know they should not be doing.

I notice Mr. Beard in the audience, from Sears Roebuck & Co. He was president of the Chicago Employment Advisory Club. You employ a good many women over there, Mr. Beard. We would like to have your experience along that line.

MR. C. R. BEARD (Sears, Roebuck & Co., Chicago) : Mr. Chairman, we have now about fifteen thousand five hundred employees, and I think about eight thousand five hundred are women. We have lost in our Chicago organization about nine hundred and fifty or nine hundred and seventy-five men, a total of over a thousand, counting our branches, and that has created a condition termed this morning a vacuum. Our work requires largely, it has in the past, young men especially active. The market has not afforded a sufficient number of these, and after carefully measuring up the job's requirements and all the conditions, we have for some time been putting on women. Generally the proposition has been satisfactory. We are frank enough to say that in some cases we made mistakes; we did not have quite the proper measure of the job; perhaps we did not quite sufficiently analyze the capabilities of the women, and we did make some mistakes. I think at one time we had about a thousand additional women over the regular number.

Last winter there was quite a change from freight shipment to parcel post, due to certain government restrictions and certain cataloging of merchandise, that made it necessary for us to have an unusual number of parcel post packers. We could not get young men in sufficient numbers to handle the work, and by changing a set of fixtures and changing the restrictions in the weight and sizes of packages we organized a force of between three and four hundred parcel post packers among the women. Some of those women—not many, however—but some of those women have exceeded the average output of male packers. On the whole we believe that the employment of women last fall has afforded us sufficient information for further study. It is all right for people on the outside to say you can do thus and so, but with something like two hundred departments and great ramifications and complications of all kinds in orders and shipments, it is not the easiest thing in the world to switch over from men to women and have it all work smoothly at first. But we feel very much encouraged.

As regards the wages of women as compared with men, there was a slight reduction in the starting wage owing to the average low efficiency at the start. But the scale has been so adjusted that measured output for output women can make the same rate as the men on parcel post packing.

We have tried also women in our shoe department. We are now reconstructing some fixtures in our automobile accessory department that will make it necessary to use order-fillers, women order-fillers, something that a year ago if it had been proposed we would have said at that time that it was utterly impossible.

We have put great numbers of women in our shoe department, inspecting and rejecting. One of the most interesting sights and novel in a way

is to see these women at work. Previously we have always had a corps of what we supposed to be necessary expert shoe men to reject shoes. We made a careful study of the situation and replaced those men by women, with splendid results. We discovered, to our embarrassment almost, and it also hurt our pride to think that we did not know before that it did not require a man to reject shoes. The women were carefully selected and are giving first-class service.

We believe in the women, and we cannot help believing that eventually they are going to be more necessary than they are today, and we are preparing to take care of our needs with women as the war conditions make it necessary.

If there are questions I will be glad to answer them.

MISS HOAGLAND: How many hours a day do they work?

MR. BEARD: Forty-seven and three-quarters hours a week. The women are off twenty minutes before the men. We let our women off at 5:10 in the evening; the men work until 5:30. That is because of the peculiar street car situation we have surrounding our plant. We let them off ten minutes before for some years, but it did not result in the proper handling by the street car company of our eight or nine thousand women, so we raised it ten minutes more and now the women are usually cleared from the terminals and are away before the seven or eight thousand men come on to the street.

MISS McDOWELL: May I ask the average weight of the packages the women handle?

MR. BEARD: The average weight would run about five pounds, but there are heavier packages than that. We tried at first to separate all light packages from the heavy ones. By changing certain fixtures we found that the women could handle the average packages up to twenty-five pounds. Then we took as an experiment some of the larger, stronger women to see whether or not they could handle the heavier ones. But it has not been very satisfactory, and we do not quite feel that a woman should be expected to handle packages up to fifty pounds, the government limit.

MISS McDOWELL: Do the women wear a uniform of any kind?

MR. BEARD: The women of their own accord, of their own initiative, decided on a certain style of perhaps gingham or percale or maybe silk, for all I know, an inexpensive apron, the kind that has sleeves in it and ties in the back, and these are furnished practically at cost, at almost no cost at all. There is no regulation uniform.

MISS BENNETT: Do you employ any married women?

MR. BEARD: Yes. We had at one time about eight hundred part-time women, women who wanted to work part time, four hours in the morning or five hours in the afternoon.

MISS BENNETT: How do the married women compare in regularity of attendance with unmarried women?

MR. BEARD: Not quite so good. The peculiar thing is that the women who are in the morning shift are more satisfactory from the attendance standpoint than those in the afternoon. The morning force is normally always complete, with few absentees. The term that is used in regard to the afternoon force is that it is all shot to pieces. We may have

twenty-five single women, forenoon women, and may require forty on the pay-roll to handle the work in the afternoon, because they are absent for various reasons.

MR. CRISSEY: What do you think are the reasons? What is the main reason?

MR. BEARD: Well, I cover that by just one word, domestic. If you are married you know what that means. I don't mean to be impertinent or discourteous to the ladies, but it means the grocer didn't come or the decorator, or a thousand and one things, which is all perfectly right.

MISS BENNETT: You spoke of the twenty-five single women in the morning, and said in the afternoon it required forty. Do you use the married women in the afternoon?

MR. BEARD: Did I say that?

MISS BENNETT: I was not sure. I thought so.

MR. BEARD: No, I mean the women who give the morning service instead of the afternoon.

MISS McDOWELL: Are you still keeping up the part time work?

MR. BEARD: Yes, putting them on now.

MISS BENNETT: Would that be because it is part time work, or because the part time workers are married women; are not the part time workers as a rule irregular?

MR. BEARD: I think the married women are subject to being absent more than the single women. In fact, I have statistics to show that. But taking them all in all it has been a very satisfactory arrangement for us, and it has been apparently quite satisfactory to the women.

MISS BENNETT: Were you successful in getting all the women employees that you need, or do you find a scarcity of them?

MR. BEARD: Yes, we find the same scarcity that other concerns do, I presume. I think you know something of that, Miss Bennett, and I am sure Mr. MacArthur does.

There is one thing about the part time women that is not entirely satisfactory, and that is the bringing into the industrial contact a class of women that are physically incapacitated for any work that requires any degree of speed or endurance. It is unfortunate. It is not unusual for us to have women applying for part time work that are entirely too old for any kind of work that we can figure out for them.

MISS FLORENCE KING: I am one of those women who for more than twenty-five years has had to be out making a living, and fortunately or unfortunately, in a line of work which necessitates my matching what wits I have with men every day, so I have to a certain extent been able to get their viewpoint and in a measure at least to analyze from their standpoint.

I came in too late this morning to find out who wrote the paper that Mr. MacArthur was reading, but I concluded before he had finished it was either a man or an anti-suffragist. At any rate it certainly appealed to me as an echo of the past ages. Whoever did write it surely does not comprehend that we are living in the twentieth century, and it seems to me a work of supererogation to try to even get that person's viewpoint. What is the use of wasting our time over something that has been dead and buried so long ago that the memory of man runneth not to the contrary?

Why, gentlemen, just think of what would happen if chivalry becomes a lost art! Would not it be terrible if it were possible that men had language with which to express themselves in terms that we do not hear every day, and women would have to listen to them if they worked in shops, factories or offices or any place else where men were employed also and were accustomed to use very vile or profane language? I wonder if he has any language that we do not hear every day, and by some reason or other we are able to live through it. We become used to it, I suppose. But those are all things, it seems to me, that we have buried long ago and forgotten. Now that the conditions are upon us necessitating this change, it is no more a question of whether we shall have women in industry or not, than it is whether we shall get into this war or not. Are we not in it as much as we can be, and are not the women in it just as much as the men? Are they not working just as hard as men to try to help win this war?

The great trouble is it seems that we have for so long in the past been used to treating women as little children, not realizing that they are individuals, that they have minds of their own, and even ambitions. We have many well educated women, capable women, experts, in fact, in their particular lines of work, who have been striving for a long time to have an opportunity to give the right kind of expression to their work and their ambitions. Now that time is here and if women could be given the same opportunities for advancement that men are given I believe it would be the greatest incentive for better work, and that many places could be filled by women that are not filled now.

I noticed that Miss McDowell said there was a tendency to put women into hard laborious positions, on the railroads in fact, and I believe that it is true that where those changes have been made women have been taken from other occupations and at once thrust into a new situation without any preparation or any training at all, requiring very strong men to do the work satisfactorily. They put the women in without any training or any preparation at all for these new duties. We notice when the government is mobilizing its army it has spent a year getting ready, and our army is just getting into the war. Now, where such extreme changes are made it seems to me some attention might with profit be given to getting these women trained for such positions rather than to take them from one position to another and say, "No, go do the work." It is not a fair chance for the women, and I do believe that these different industrial enterprises now making the change to woman labor could well consider things of that kind, and then too give the women a chance to advance as rapidly as their ability and the results of their work will permit.

Note in this war work the conditions, just a few of them, with which able, competent women have had to contend. Take it in England, for instance, when the medical women in England organized the woman's hospital corps and offered that to the government of Great Britain. But, oh, no, Great Britain could not have women in a capacity like that, not at all, they would not accept them. What did these women do? They went across the channel and appealed to the government of France. France was glad to have them, and their hospital was established in France. Wounded soldiers were brought there, and by and by some British soldiers came there. After a while England learned that it was an actual fact that their

British soldiers were going to that woman's hospital, and they made some inquiries to find out about it, and they found that the soldiers preferred to go to the woman's hospital. Then the next question was why, and the word came back from the soldiers themselves that it was because these women were not so quick to amputate arms and legs and make these men cripples for life, until the last thing had been done that could be done to save them. Why, men rush in and it don't make any difference what they do; it does not mean anything to amputate an arm or a leg, and so the work goes on, and it was passed around that the soldiers liked best to go to the woman's hospital because they had that consideration that meant so much to them in after life.

Now, take in our own country when the medical women of New York organized their woman's overseas hospital and offered it to our American government. "No, we cannot have women in those positions. Offer it to the Red Cross, if you please. No, no." Then what happened? The women simply managed it themselves and sent that hospital corps overseas, and they are there now and they are doing good work.

Those are some of the obstacles that women have to meet. Able, capable, well-trained, highly educated women. It seems to me it is time we as Americans who like to boast that we are the most progressive nation on earth, it is time that we shall consider these problems from that angle and give the women the opportunity of doing the very best they are capable of doing, and you will find it recognized that efficiency is the keynote, speed is the watchword, and patriotism the inspiration that will put the whole situation over the top, and America will emerge from this war and still be the greatest nation on earth. (Applause.)

MR. W. D. GILLILAND (Selby Shoe Company): We are engaged in the State of Ohio in that mysterious business which has to fit the fancy to match the millinery and perhaps to fit the foot of the lady. We make shoes. We find it difficult to get women to accommodate themselves to some of the positions which were formerly filled by men. I want to contribute briefly my experience within the last five months, in order that I may get some assistance from some of you operators who have succeeded in solving some of the difficulties which up to date we have been unable to solve.

There are some respects in which women have been shown to be superior, in putting women on men's jobs. In a few instances we find that the production has increased. We also find that in putting women in departments where there were only men and where there were a pretty rough type of men, rough in their actions and in their nature and rough in every other way, that we were very much gratified to find that instead of the women being dragged down to the level of the men or finding it so disagreeable there that they would quit on account of these surroundings, quite the reverse has taken place, and the men cut out their swearing and their vile language, and they have modified themselves to accommodate themselves to the women in the department. Those things have been very gratifying to us.

Some of the unfortunate things are these: A great deal of work in our line of business is more or less distasteful to women. For instance, the use of stains on shoes, which must be used with the hand, gets the hand permanently stained. A man does not mind that so much, but it is

a tremendous sacrifice to a woman to engage in work which permanently stains her hands. It is hard for her to overcome that. Again, there are odors which are disagreeable, shellac and cement and one thing and another, and a woman hesitates very much at going into a position, even though the work may be light and the remuneration may be adequate, that has a disagreeable odor about it continuously, and we have had some difficulty along that line.

Another thing, it is an occupation which is a light occupation for a man and not difficult, but it requires constant standing on the feet. Here is a rack of shoes, several shelves of them, if you please, and the operator must stand up so that the shelves can be reached, so that he can operate the pedal on the machine and at the same time handle the shoe. We do not like to ask a woman to stand up, and we have a seat where she can go and sit down when she becomes exhausted. Yet those shoes must move along the line; here is the operator at the left waiting for the shoe to go on with the work, and if one stops the whole line of work stops, and the women are ambitious and eager to do their part. We find they are inclined to over-exert themselves and not use the seats which have been provided for them. That is one difficulty we have not been able to solve to our satisfaction yet.

Speaking of the women being ahead of the men and putting out a greater production, we find that to be misleading. A woman goes to a position of that kind where the work is new and she is ambitious and wishes to succeed as well as her predecessor, and while that may be all right for a while, we must not depend too much on that, because we would overwork the woman and possibly take too much of her ambition and her desire to succeed. That would not be permanent in the long run, and I think the results would be disastrous rather than favorable in the end.

I was interested in the question in regard to married women being irregular in attendance. That is one of the big difficulties. In much of the work that we have to do we cannot expect a college graduate, however patriotic she may be, to come and offer her services in those lines of work. They are too disagreeable and too distasteful, too hard. She is not used to the factory system and she would not want to do it. We cannot expect educated women to do it. Therefore, we have to depend to a great extent on ignorant women and women who must work, women whose husbands have deserted them and women whose sons and husbands have been called to war, into the service, and we must try to utilize women of that type in these positions, and we find it very difficult to keep our system intact and keep our work going and keep our production as regular as it should be, because of the different domestic difficulties. Harry has the measles, or I have to go to the country to see a relative, and a thousand and one reasons of that kind.

Another difficulty is that this matter has been rather extensively advertised, and a woman thinks she is doing a patriotic duty by taking a position in the factory, and she comes there with the idea that she is conferring a favor in offering her services, and she must be given more consideration than any manufacturing concern can afford to give to a woman of that kind, and when the least little difficulty comes up she takes the posi-

tion that she is doing this as a favor, and if you haven't sense enough to appreciate it and make it easy for her, even though it may be at great expense to you and the work will not stand for it, she will seek employment elsewhere.

Also it is difficult for a married woman who has been in a home and has never worked in a factory to adjust herself to factory conditions. Here is a married woman who has children, who has had the respect, perhaps, of the people in her home and has been the head of a house, to come in and work under a foreman and simply be one of a number of other people who must get their work done and must get it done properly, and it is very hard for her. However courteous people may be, if there is a feeling that she is simply a very insignificant cog in a very large wheel, that is very irritating to her and depressing, and she very often feels that it is necessary for her to quit work of that kind.

We unfortunately happen to be in a town where an immense ammunition plant has been expanding very rapidly and where large wages are paid and where they take women without asking any questions and can easily pay them higher wages than we can in our business, which is one of the oldest industries in the country and where the margin of profit is comparatively small. As a result of that we find that we cannot get the women to do the work. Within the last five months we have put on two hundred women on positions which were formerly occupied by men. We have two hundred more positions where we would like to put on women, positions which were formerly occupied by men, but we cannot get the women.

The question naturally arises, why not go out of town and get them some place where they are more plentiful. Unfortunately we have not housing conditions which are such that we would feel justified in asking any girl to come from the outside, and we have not yet devised any scheme whereby we can provide proper housing facilities for girls who come from out of town.

If any of you have any suggestions to make which would be helpful along these lines we would appreciate it very much. (Applause.)

THE CHAIRMAN: It is time for us to close. It is always difficult in a meeting of this kind to wind up the session, because the longer we talk on these problems the more things come to mind which we want to discuss and solve. I am sure that every one here this morning has received a great deal of profit from this conference. I know I have.

On motion the meeting adjourned.

FOURTH SESSION

Thursday Afternoon, March 28, 1918

"MECHANICAL EQUIPMENT—ITS FUNCTION IN REPLACING MEN"

Mr. Leon I. Thomas, Managing Editor, Factory Magazine, chairman.

The meeting was called to order at 2:00 o'clock, and all joined in singing America.

THE CHAIRMAN: As Mr. Emerson pointed out yesterday in his interesting and thought-stimulating address, one method of solving the

servant girl problem is to sidestep it entirely, to sidestep it by getting the work done outside. He pointed out that the family washing is now the job of the laundry. Many households now avail themselves of the opportunities offered by restaurants for eating. They even go outside for light, and in some cases for heat, and have it piped into the house. He might also have suggested that another method of sidestepping the problem was by the greater use of mechanical equipment. The washing machine, for instance, the vacuum cleaner, is doing much to render less acute the servant girl problem. Cannot many of the present-day factory labor problems also be sidestepped as it were by a greater use of mechanical equipment in place of labor? Of course I realize that the use of the word sidestep is only another way of saying to put off, or to pass on to the next man, and I appreciate that the big fundamental labor problems cannot be sidestepped, but are there not local labor production problems in particular that may be handled by an ample use of mechanical aids to men? It is this side of the problem that we are to discuss this afternoon, and I believe ably so.

As Mr. Berndt said yesterday afternoon in his talk on the purposes of this convention an entire series of meetings might be held on this subject of the mechanical equipment and its function in replacing men alone.

About a year ago, just before the annual convention of the Western Efficiency Society, a man came into my office with a view to obtaining from our company an exhibit for the convention. He very calmly planned that exhibit, planned it, scheduled it and dispatched it. Furthermore, he had it on time. Mr. Ford, I know, knows a lot about planning, scheduling and dispatching, and we are fortunate in having him here this afternoon to talk upon that subject, "Planning, Scheduling and Despaching," by W. S. Ford, manager efficiency department, Montgomery Ward & Company.

"PLANNING, SCHEDULING AND DESPATCHING." W. S. FORD.

Until lately, we, as a nation, have not been greatly concerned about our failings because our failings did not mean disaster. Seemingly, there was an abundance of everything and the limit of our resources was never in sight.

With complacency we might throw away the valuable by-products of our industries, give little heed to the efficiency of our labor.

In addition to our material resources, we were seemingly blessed with all the time there was. The speedy foot work of the State Street crowd hurrying to lunch is the marvel of the world, but after—I won't say how many years of procrastination as to subways—the same crowd crawls home on the platform of a street car or suffers the sweet communion of the "L" train.

The last ten years have heard much of efficiency and of scientific management. As a matter of being progressive many business men have applied the principles and prospered along with others who did not apply them. The waste of material, time, and efforts, have not necessarily meant failure in business.

Examples of inefficient but extremely prosperous enterprises have left

the impression that modern methods are a sort of final polish to a business built by the strong but reckless blows of an axe and sledge.

But mere rugged strength of resources no longer protects us. Our point of view has changed greatly in the last year. To our great surprise we have learned that in the midst of plenty it is possible to suffer want and that we must value each day's effort in the same terms that we value all that is good in our national life.

As a nation we know now the consequence of failure to plan and prepare. We are learning to think in terms of time and more than that we are acquiring that mental discipline and determination and seriousness of purpose so absolutely essential to the timely execution of any plan.

Mr. Knoeppel at the National Conference last May said: "No longer can we continue in the wasteful pleasure of seeking an extravagant path we have been traveling in the past, and continue to survive as a nation, for the very good reason that a strong and vigorous power whose gospel of 'right makes might' whose utter disregard for all the laws of humanity and international control and intercourse is every day doing its utmost to dominate and force its will upon the rest of the world.

In this conflict of autocracy against democracy: of the rule of divine right as against the rule of a free people, the final decision is going to rest with the United States of America—you and I. How we decide depends entirely on whether we look upon this conflict as a six-round sparring contest, or a gruelling prize fight with bare fists and no ring rules; or whether we consider it just another border skirmish or war of the most hellish variety.

The time for talking, for criticism, for ridicule, is over—from now on our slogan must be ACTION!—action of the most vigorous kind; action in which individual differences must be forgotten; action in which all must put their shoulders to the wheel and with a mighty heave do their bit in making this old world of ours a proper and fit place for ourselves and our children to live in."

Those words have a serious meaning to us to-day, which they did not have last May, however, well we realized their truth. We watch the reports from the front and are grave because there is one thing our country lacks—and that thing is time. Time to organize, to train, to construct, to transport. The time factor enters into every Government contract and we are learning a new art, the efficient use of time.

It is the purpose of this paper to briefly review and emphasize the principles of planning, scheduling, and dispatching through which industry will organize to accomplish results in the time allowed.

Let us consider first those manufacturing plants which during the current year must partially or completely discontinue their regular product, re-arrange and re-equip their factories, train their organizations in new and unfamiliar work, and maintain intensive production schedules.

They cannot wait for the slow process of evolution and adjustment, letting each day more or less take care of itself but must lay out a comprehensive plan, an intensive schedule, and make the most economical and effective use of time in their execution.

Of necessity they must adopt broad fundamental principles of Scien-

tific Management which may be roughly grouped under four heads:

Organization.

Plant and Equipment.

Methods.

Labor.

Regardless of petty personal aims and ambitions the organization chart must be clean cut with definite clearly defined duties and responsibilities.

There should be a fixed organization policy as the first step in standardization and preplanning. A co-operative spirit with a strong central control should wipe out friction and the tendency to shift responsibility. True, lining up an organization that has followed certain grooves for years takes time, but if the plan is right no more favorable time for putting it into effect could present itself than the period in which men are bound with common purpose as in the present hour of necessity.

In the matter of plant and equipment where conditions are to be made and new machinery installed, the opportunity and necessity for scientific layout cannot be too strongly emphasized. How much more satisfactory from the standpoint of speed, eventual economy and working conditions to lay out a consistent scheme for expansion and to plan the flow of work and arrange machinery by use of floor diagrams and templates. The details of methods has no place in this paper. We can only hope to point out how important it is not to let the haste of re-organization cause proper and scientific planning to be confused.

It is with methods that we are primarily concerned.

The purchasing agent has no enviable position. On the one hand there is a difficult material market, on the other, the most drastic demands for delivery. His purchase control plan must be comprehensive, up-to-the minute, free from red tape and in close co-operation with the shop stock and production records. He does not dare throw up his hands at a difficult stock control problem. He must solve it and the experience of other plants is at his disposal for the asking.

A much neglected but important factor in saving time and preventing mistakes in the handling of drawings and patterns is the assigning of symbols to machines, tools and the product itself. Symbols which are not cumbersome and which provide a shorthand method of positive identification and classification should be designed and used from the start.

When it comes to methods for production control, the problems are, of course, as diversified as the very plants themselves, but there are certain fundamental principles, a certain general procedure which may be said to apply to them all. The first of these is the centralization of control. It would seem almost unnecessary in this progressive age to mention this very important factor for successful factory management, but what passes in main instances in the mind of the plant manager as "Central Control" is at best but a half-hearted and unsuccessful plan.

What is everybody's business is bound to be nobody's business and when the responsibility for getting out work is passed from one foreman to another like a medicine ball, you will know the result. An organization taking on Government work, especially where speed and prompt co-ordina-

tion is so important, should know what "Central Control" really means and not be content with any half-hearted substitute.

Planning a centralized production system requires preliminary standardization, of which proper stock records, symbolization of parts, drawings, machines, tools, dies, etc., standardization of equipment and standard outputs for machines are all a part. In brief, it is absolutely essential that there be on file the necessary data from which can be predicted with reasonable and practical accuracy just how each job should go thru the shop.

Planning to meet labor conditions both now and after our boys come back and business undergoes a re-adjustment, takes on a somewhat different aspect than formerly. No far sighted man doubts for a moment but that there will be a greater Democracy in Industry five years from now than even the most radical thinkers have been wont to predict.

If on such a tremendous scale as the mobilization of the army the scientific selection of men for the work for which they are best fitted is now in effect and successful its universal application to industry is assured for the future. If the government now takes into its hands the control and distribution of labor, its interest in just wages and conditions of employment will not end with the war. And so whatever the pressure of re-adjustment, the problems of selection, training and wage payment should be a carefully thought out part of the plan.

We are forced in this brief paper to deal in generalities. If there was ever a time when Industrial Engineers had an opportunity to prove the efficacy of the principles for which they had been contending it is now.

But what of the plants that are continuing their usual line of work and are suffering only the difficulties caused by the draft and general market conditions.

The answer is found in every morning's paper. From the other side come the words: "Hurry! hurry!" On this side you see the answer, "give us time."

Do not pass blame onto the Government. It is up to us to look within ourselves and our own plants and see what we are doing. Here the same principles for organization, plant and equipment, methods, and labor control apply just as strongly as in a plant under direct Government supervision. There should be the same definition and tightening up of the organization. There should be the same scientific planning of plant layout and the arrangement of machines. There should be a rehabilitation of methods and old worn out slow schemes should be judged for what they really are and promptly replaced by others in keeping with the present emergency. The selection, training, care and payment of workers must receive more thoughtful and perhaps radical consideration than ever before.

And so one of the first steps in the solution of our national problem is thoughtful efficient planning, from the president on down. We must look into the past for the experience from which to construct our plan and into the future to determine what that structure should be.

After we have said what we intend to do, our interest is next centered around the line of accomplishment. We may plan almost anything but to bring that plan within a time limit is altogether a different thing. I be-

lieve I am safe in saying that 90 per cent of business organizations are not even attempting to follow a rigid time schedule on production.

In manufacturing we find some of the best examples of carefully worked out schedules in the automobile industry because that industry requires not only a revamping of plans with each season's changes in styles, but also careful chosen dates for deliveries. Even automobile plants which make no claim to operation under scientific management as it is commonly known, must from the nature of the business, set certain times for the performance of their activities.

In mercantile lines, the large mail order business is one which is forced to adopt a rigid schedule for each hour of the day and a time allowance for each step in the progress of the customer's order.

Such a time schedule for each step in handling an order is somewhat as follows.

The day is divided into ten minute periods and a certain quota is handled every period. An order received on the early morning's mail is split up by divisions reassembled at a definite time, at a definite place and with surprisingly few exceptions is on its way to the customer the same day. Each ticket has shown on it the time and place at which all the goods belonging to it shall meet. The merchandise divisions are allowed say 21½ hours to handle and the penalty for being ten minutes late is severe.

Those who have never worked under the pressure of strict schedule have little conception of the mental discipline and the strict attention to business required to maintain it. Neither have they experienced the deep satisfaction of seeing work come thru with clock like regularity.

The execution of the plan and the schedule we will call despatching. Despatching presupposes control and successful control depends upon standardization of the four broad factors we have named:

Organization.

Plant and Equipment.

Methods.

Labor.

Most of us have some idea of the ingenious and elaborate plan in use in the Franklin Automobile Plant where from a room located in an upper story is controlled the flow of work thru that big factory.

Mr. Muther of Gishold Machine Co., who will speak to us may tell us about the standardization of machine tools which must provide proper control. Mr. Berndt, who will speak tonight, may tell us of the patient study of all factors which preceded the successful operation of the Ryerson despatching plan.

The customers of all scientifically managed plants and hundreds of others can testify to the efficiency of the simple but comprehensive formula.

A Complete Plan.

A Strict Time Schedule.

Standardized control of despatching which will execute the plan and schedule.

Uncle Sam in his hour of need may expect that we will apply it and make good.

THE CHAIRMAN: I am willing to admit of a personal favorable bias, but it seems to me that the speakers' committee has exercised rather good judgment in putting a managing editor as one of the regular speakers this afternoon, and so I take great pleasure in introducing the next speaker, Mr. A. Russell Bond, managing editor of Scientific American, New York City, whose subject is "Mechanical Aids to Man."

MR. BOND: Mr. Chairman, ladies and gentlemen: It is considered poor form to open an address with an apology, and therefore, I am not going to apologize, but at the same time I think I owe you an explanation. This is the explanation without an apology. Years ago, many years ago, when I was at college, I was told to write a composition backwards, to start with the conclusion first and then you have a destination to which you can direct your argument. After that write the argument and the introduction, and last of all, the title. Not until you have your paper complete do you know what to call it.

Unfortunately in this case I did the wrong thing. I gave out the title first. I blame it all on the telegram. There is something magic about a telegram, there is a compelling power. I came across an illustration of this also in my college days, a situation I met in a comic paper, and I did not realize its full significance at that time. I don't think Mr. Newlywed did either. It was the day after the honeymoon, and Mr. Newlywed dragged himself to the office and plunged into business. He was handed a telegram reading, "Dear George, please come home at once, I am dying." Naturally Mr. Newlywed was panic stricken. He took the first train to Darlington and fell into the arms of his beloved bride. After the customary greetings he said, "You said you were dying." Mrs. Newlywed's explanation was that the telegraph agent would not let her write more than ten words for twenty-five cents. "I was going to say 'I am dying to see you'; but my ten words ran out." (Laughter.)

In my own case it was a telegram which I received from Mr. Dent, in which he asked me to prepare a paper to be read at this conference, and he asked me to reply by wire. I did not stop to consider, but immediately sent him a wire saying that I would speak on "Mechanical Aids to Man." Had I stopped to consider I might not have prepared the paper at all. Certainly if I had I should have reversed the title and made it read "Human Aids to Machines."

"MECHANICAL AIDS TO MAN."

A. RUSSELL BOND.

Recently, one of my associates on the staff of the Scientific American, Mr. J. M. Bird, undertook to investigate the productive capacity of man in the present day as compared to his capacity a hundred and fifty years ago --or before the age of machinery. He found the task a very complicated one, but he arrived at certain conclusions, from which I shall quote at some length, as they have a distinct bearing on the subject as announced in the program. His method of procedure was to investigate various occupations of former times, find out as best he could the quantity of products that a man could turn out in a given time, and compare this with the work of a man today who employs up-to-date machinery for the same class of product. He found that the type of machine containing the greatest labor-

saving potentiality is the multiple-unit one. "Here, each unit replaces a single man worker, for the units are so combined that many of them are handled from a single control by a single operator. The units may work faster than the man, but this is an incident. The inherent advantage lies in the fact that here we have actual multiplication of the operative's hands. The example par excellence is the spinning wheel. Here, one girl in charge of several thousand spindles, will turn out from 10 to 12 thousand times as much cotton yarn as her great grandmother's mother could produce on the spinning wheel with its single spindle. In one type of mule the exact figures are 820,000 yards per hour against 75. Knitting and weaving machines are not so effective, because they require more attention from the operator, who accordingly, does not care for so many of them. Even so, the ordinary power loom increases the individual output of from 40 yards per week, to well above 3,000—a factor of 75 or more."

In this way he went through the various types of multiple-unit machines, not only in the textile industries, but in other lines of work as well, and finally arrived at the conclusion that from 75 to 100 seemed to represent a very fair general average for the productive factor of the multiple-unit machine.

"The second fundamental type of machine is the one which requires an operative for each unit, and here the economy depends solely upon speeding up the work. It is in the book and magazine factory that we find the most consistent reliance placed in the single unit mechanism. The linotype, for instance, does the work of from four to eight hand compositors, with six as a fair average. On the old Ben Franklin press, requiring inking, insertion of paper, screwing down and screwing up again, and removal of the sheet, it was hardly possible to strike off more than 30 impressions per hour of four pages each. The latest flat bed press has a practical capacity of 1,400 impressions per hour and, printing 16 pages at each stroke, we get 22,400 pages an hour, against 120 by hand. Under union conditions, three men are required for two presses; so, in practice, we get a factor here of 120. But an automatic is now on the market which makes it easily possible, as far as the machinery itself is concerned, for one man to run two presses. On this ground, without reference to extrinsic restrictions, it will be seen that the printing machinery is capable of multiplying the book printer's capacity by 360. In the bindery, we find the gathering machine collecting the pages of five volumes while a girl is doing one. The case making machine does a rather complicated job of cutting, fitting and pasting, and shows a factor of at least 10. The machine which puts the book in its jacket imitates closely the hand-worker's technic and attains a factor of somewhat less than 3."

Turning from this to other classes of work, we finally arrive at the figure 10 as a fair average factor for the single unit machine in all fields.

"There are other machines that so revolutionize the way of doing things that there can be no comparison with the hand worker sufficiently close to justify either of the preceding classifications. One such type is that which receives the raw material in bulk and delivers the finished article—more often than not counted and packed. The web press for newspaper printing, will turn huge cylinders of paper into finished news sheets

at the rate of 288,000 8-page papers per hour. Ten operatives are employed on the machine which gives us 230,400 pages per man per hour. This is something like 8,000 times as fast as Benjamin Franklin could have done the job." In the case of the web press the machine is really a factory in itself; on the other hand, we must consider many of our large factories as huge machines in which "the raw materials flow in in a steady stream at one end and emerge at the shipping platform as the finished product. Automobiles, shoes, canned goods, etc., are some of the commodities whose mode of production is known to follow this plan." The only way to arrive at a comparison is "to divide the total output of the factory by the number of employes and compare the output per man, thus found, with that of a single hand worker. . . . When we make anything so complicated and heterogeneous as an internal combustion engine, or a pair of shoes, we inevitably find many operations that must be done by the slowest of machines or even by hand. When these form a governing factor in the output, we must either slow down the faster items to the pace of these slower ones or employ a disproportionate number of men at the slow jobs." Another complication is the fact that when a shoemaker makes a pair of shoes, "every second of his time spent in the work goes to the advancement of the job in hand, while in a big factory there may be hundreds of workers who never handle any part of the finished product. Again, a shoe maker buys many small parts, such as eyelets, laces, etc., which, in a big factory, are worked up in the raw."

Considering all these complications, of which I have enumerated only a few, the conclusion is finally reached that the average factory of assembled goods would be about 5.

Another class of machinery considered is that which affects economy "by taking a bigger bite of work than a man could handle. A good-sized bucket dredge, for instance, may multiply the efficiency of the worker by a hundred. The lifting and loading magnet moves 90 tons of metal per man per hour, against 1 1-2 tons by a longshoreman in the old way. . . . The huge loading and unloading machines of the Great Lakes may replace almost any number of men from a hundred up; the bigger the job, the bigger the saving." For motor transportation 5 is the factor arrived at, while freight transportation by rail shows a factor of about 25.

The final conclusion from all these figures is that a man today is productively worth ten men of the period of 1750 to 1800.

Undoubtedly machinery has done wonders for man as a whole, but what I wish to consider in this paper is the relation between the machine and the man who operates the machine. When the primitive man first took up a stick of wood to defend himself against the beast, he was making use of a machine element; and this application of the lever certainly was an aid to the man. Gradually, very gradually at first, he began to develop other uses of this machine element and to acquire knowledge of other machine elements. Then he learned to combine them into machines that were strikingly useful. He began to use the powers of nature to drive the machine. The machine began to do the greater share of the work, until the relation between the man and the machine was reversed. The machine did the work with the help of the man.

Certainly a power-driven machine can hardly be classed as a mere aid to man; the man and machine do a certain work together, but they are not yoked together. The machine does the hauling and the man does the driving or directing. This is even true of many machines that are driven by human power. The machine actually does the work. It takes the energy furnished by the operator, multiplying it either in speed or in power, or otherwise utilizing it in a far more efficient way than a man could himself. And so we have certainly come to the age in which we can truthfully state that the machines are our workers and the operators are the directors of the machines.

I do not like the word "labor," as applied to the work of man in the industries. It always seems to indicate a great muscular effort and wearisome toil. While this may be true of many operations, we are rapidly advancing to the point in which the operator has less and less use for his muscles and more and more use for his brains. I think that the industrial engineer has a mission to perform in emphasizing this point for our industrial classes, showing the operatives that machinery takes them out of the laboring class and makes them directors of machinery.

I should like to see the name "Labor Union" changed to "Director's Union." Please understand that I have not a word to say against the members of Labor Unions or their organization. They have dignified the word "labor" so that it has lost much of its original significance; and yet it did originally mean wearisome work and great muscular effort. But now we are gradually getting away from such toil and have entered a new era—an era in which brains count for more than muscle.

Man has developed marvellous mechanical contrivances. We have machines that can do almost anything that a man can do. We have machines that can see! machines that will keep watch of the smoke stack of a steamer and, if dense smoke comes out of the stack, will notify the engineer below, so that he can attend to the proper firing of his furnace. There are machines that can hear—that can take down a speech and record it on a wax cylinder, and which can then reproduce this speech exactly as it was given to them; machines that listen for the throbbing of the submarine's engines; railroad signals that respond to the blast of a locomotive whistle. There are machines that can feel the weight of a fly's wings; machines that can sense the tremble of the earth, five thousand miles away; machines that respond to the heat of celestial bodies trillions of miles distant; machines that can count the very atoms in the lightest of gases. On the other hand, we have machines that can lift stupendous masses of metal with little apparent effort; that can pick up a loaded coal car and pour out its contents; that can exert a pressure of ten million pounds on a test column.

All the senses of a man have their counterpart in machines except possibly those of taste and smell, which are really chemical reactions. As I am using the term "machine" in the broadest sense I am not at all sure that there may not be certain instruments which will respond to the acidity or non-acidity of various solutions or to other chemical reactions that correspond to taste in the human machine. There is a mechanical contrivance which, if attached to the gas jet, will smell the gas when it has

been blown out by Mr. John Hayseed, and bring into operation a mechanism that will light the gas again. There are machines that seem almost possessed with human intelligence. One clever inventor recently produced a mechanism that could remember and forget, although he never put the apparatus to any practical application. His purpose was merely to show that memory could be reproduced mechanically. This machine, if subjected to a certain reaction, would respond to that reaction for an hour, or for a day, or for any length of time to which it was adjusted, after which it would forget what it was supposed to do, and do the wrong thing, or fail to function altogether. More human in character, certainly of more service, are the machines which will solve mathematical problems. Not only those which will add and subtract, multiply and divide, but the complicated machines which will solve problems in calculus and higher mathematics—the integrator, for instance, which will solve problems that cannot be worked out mathematically. The tide recorder in Washington, will perform mathematically calculations that a hundred computers could work out in the same time.

But wonderful as all these machines are, not one of them is endowed with real intelligence. Man can produce a machine that will play chess, but the machine cannot do its own thinking; it will only do what it has been designed to do. It will react to the various conditions to which it may be subjected, but it has no will of its own and no power of thought. No matter how far we may advance in the development of machinery we shall always come up against this barrier—the impossibility of producing brains. The most perfect of machines is useless without an intelligent operator. In the industries of the future, no matter how far they are advanced, operators will be indispensable; they will be required for their directive intelligence rather than their muscular power. Instead, therefore, of bewailing the fact, as men frequently do even in these enlightened days, that machines are replacing men, we must look upon the subject from a broader point of view and realize that machines are demanding men, and that they are elevating man to a higher plane.

One of the sad features of the dreadful war we are now engaged in, will be the return from the fighting front of men who have been disabled or crippled, so that they will be unfit for the work that they used to perform. This is a subject that is to be taken up at length tomorrow afternoon and evening; and while I do not wish to anticipate anything that may be said at that time, I wish to bring out a point which has a direct bearing upon the subject before us now. It is indeed fortunate that so many of our machines have developed to such a point that they do practically all of the work and the operator merely directs them. Were such not the case, the future of the crippled soldier would be sad indeed; but on his return from the front he will find plenty of opportunity for usefulness as a machine director—I like the word “director” even better than operative. No man will be so badly crippled, provided his power of thought is not impaired, that he cannot find a useful niche somewhere. In former times, the war cripple was a liability upon the community—today the machine has turned him into an asset.

This, then, is the point I wish to stress. Machines are an aid to man,

but they are our slaves, and they will not work without our direction. It is the duty of the Industrial Engineer to inspire machine directors with the dignity of their job; to make them receptive to further development of automatic machinery; to show the girl at the spinning mule, for instance that she is an indispensable element, that she is the directing brain of a myriad-armed creature.

THE CHAIRMAN: In his paper Mr. Ford mentioned the importance of standardization in management. We are to hear next something about "Standardization in Machine Shop Practice and the Training of Operators," by Ellis F. Muther, general sales manager, Gisholt Machine Company, Madison, Wisconsin.

STANDARDIZATION IN MACHINE SHOP PRACTICE and

THE TRAINING OF OPERATORS

Mr. Chairman, Ladies and Gentlemen:

Your secretary first asked me to speak to you a few moments in regard to Standardization of Machines and Tools. This subject is altogether too large to be covered in the short length of time allotted to me, so I have taken the liberty of changing the subject to read: "STANDARDIZATION IN MACHINE SHOP PRACTICE AND THE TRAINING OF OPERATORS," and hope to give you something which will make you feel repaid for the time you spend listening to me and looking at what I have to show you.

The many different angles from which this subject may be approached, also the many different meanings which can be put to the word "Standardization," as applied to the machine shop, make it a subject which has practically no limitations. But first, let us get acquainted.

The Gisholt business came into existence through an effort to standardize manufacturing methods and I will talk to you about our own work and what our company is doing in standardizing machine shop practice. In order that you may better understand what we are doing and have been doing for the past 70 years, in our plant at Madison, Wisconsin, and in order to have you get acquainted with the Gisholt Machine Company, I have had prepared a few slides showing our factory and some of the standardized methods used there.

(Slide No. 1 showing original plant). In this little building over 30 years ago, the first Gisholt Turret Lathe was produced to standardize manufacturing methods and increase production in the Fuller & Johnson Mfg. Co. at Madison.

Mr. J. A. Johnson, our first president, was the principal owner of the Fuller & Johnson Mfg. Co., and due to keen business foresight, saw a future for a turret lathe for the manufacturing of large pieces of work. This new method of manufacturing revolutionized machine shop practice.

It might interest you to know how the name Gisholt was given to the company. Sentiment had a great deal to do with it, as Mr. John A. Johnson's home in Norway was on this farm located in that rugged country and

was called "Gis-holt," which is a compound Norwegian word, meaning "Sunny-Woods."

We have a feeling at Madison, that Gisholt in Norway, the birth-place of John A. Johnson, the founder and first president of the Gisholt Machine Company, contributed to our organization, not only its name but something of its natural, rugged strength—an inheritance which our company has always honored and endeavored to transmit in spirit and in service to users of Gisholt tools.

After thoroughly trying out the original machine on his own work, Mr. John A. Johnson and his sons, who now own and manage the company started the manufacture and sale of these machines, which gradually took our representatives throughout the manufacturing world.

At first it was quite a struggle, as we had to convince the manufacturer that he could produce his work by the new methods as accurately as before and at a great saving in cost. As a matter of fact, the work is produced with a higher degree of accuracy and more nearly duplicate through the turret lathe practice than is possible with the engine lathe or the older methods. Thus a standardization in machine shop practice was started in our branch of the industry over thirty years ago, and we feel that the foundation of our success was this standardization of machine shop practice which we gave to our customers. By way of comparison, the work was produced for one third the former cost and the quality of the work greatly improved. This picture shows you the development of the lathe from a very simple machine in 1885, to the big, powerful machine which has become so popular throughout the manufacturing world today.

Enough for an introduction. Now let me show you the plant and we will take a hurried walk through the buildings.

(Show old main works.) This is the plant as it looked about 17 years ago, shortly after which time we purchased the American Turret Lathe plant at Warren, Pa., (show Warren plant) which was acquired in 1905. This plant has shop capacity for 250 men and in it we manufacture our small Vertical Boring Mills, (show 30-in. mill) in four sizes, 30 in., 36 in., 42 in. and 48 in. swing.

(Show interior at Warren plant.) This shows the Vertical Mill Assembly Floor. Note how work is standardized.

(Show Main Work and Office Building.) The next addition to the plant was to extend the main works and build the office building which was erected in 1911.

We soon found that the machine shop was getting too large for our foundry, so it was extended and the new pattern shop building erected in 1912. (Show foundry.) The pattern shop and foundry now have capacity for approximately 250 men and in the foundry we are melting about 65 tons of iron daily. (Show interior of foundry.) The building is well lighted, as you will see from the interior view and has modern equipment thruout, including the most up-to-date equipment for cleaning castings.

(Show Northern Works.) The next addition to the plant was the Northern Works which was acquired in 1915, and has been devoted to the manufacture of our larger vertical boring mills (show 72 in. mill) in four

sizes, 52 in., 60 in., 72 in. and 84 in. swing. (Show Northern assembly floor). These machines are manufactured on the standard basis of large lots of a kind at a time as shown by this view of the assembly floor.

In addition to the vertical mills we have manufactured in the Northern plant a large number of simplified lathes, one model of which is shown by this picture (show 16 in. simplified lathe) which are largely used abroad in England, France and Italy as well as in this country in the most modern munition plants. Many of these machines are being operated by women.

Here is a general view of the Northern Machine Shop floor.

The last building added to the Gisholt group is the one on the extreme right and whereas it is owned by the Northwestern Ordnance Company and is operated as a separate corporation, we think we have a right to call it a part of the Gisholt plant at Madison as the Northwestern Ordnance Company was organized by our company, at the request of the government to take on a contract for the manufacture of 4.7 in. guns. From the position occupied by the camera man when this picture was taken, you can see about one half of the entire plant.

Now let's go back as a visitor and make our trip thru the plant. In times of peace all visitors are made welcome. The Gisholt latch-string is out, but during these strenuous times, no one who cannot show conclusive evidence that he has good business reasons for seeing the interior of the plant, can get in. But, as these pictures were taken just before Uncle Sam entered the World War, there will be no harm in giving you a look at what the plant was like a few months ago. It has not changed materially since that time, except that today, over 90 per cent in fact practically all of our work is for this government or the allied governments or for contractors who have contracts with one of these governments.

Now let's go inside. Here is a general view of the main office. (Show engineering department.) And here we see the engineers at work. Here I would like to pause a moment and explain how our engineering work has been organized and standardized. At the present time we employ about 1,600 men in the entire plant; floor space covered is about 10 acres, and this does not include the Ordnance Company.

With a factory as large as this in the machine tool business, it is necessary to build several types of machine to keep the plant busy, due to the varying demand for mechanical products in the machine tool trade.

For instance, during 1914, just before the war, the machine tool industry in America was exceedingly quiet, and I can tell you it took an optimist to believe that things were looking up. About the only explanation I ever heard which truly explained how business was looking up in 1914 was that our line of business, that is the machine tool industry in general, was so flat on its back that it could look no way but up.

As I have mentioned before, our standard product consists of the Gisholt Turret Lathe, Vertical Boring Mill, Tool Grinder, Horizontal Mills, Automatic Turret Lathes, Small Tools, Special Tools, the Periodograph, etc.

I have not said anything about the Periodograph, but if time permits, I would like to discuss this apparatus with you as it is taking a large place in the manufacturing world and is a big help in standardizing machine shop methods.

As you engineers know, it would not be possible for any one man to do justice to such a wide line of machines as the Gisholt line has developed to be, and I might say today as it is still growing.

The business started as I stated before with the Standard Turret Lathe, after which the Tool Grinder was added. Here is a machine which has done a great deal to help manufacturers standardize their shop practice by making it possible to organize in a centrally located tool-room, the grinding of the tool post tools for lathes, planers, shapers, vertical boring mills, screw machines, such as Jones & Lamson, etc.

This machine is largely used today in Europe and America where a man or boy in a centrally located tool room is sharpening the tools for many men while they remain at their machines on productive work. In this connection I would like to quote to you from a letter I received from our representative in Paris. I had asked him why the people in Europe were buying so many more of these grinders than the manufacturers in America. Notwithstanding that a large number was being purchased in America, Europe was buying still more. His answer is not only exceedingly interesting, but I think is of great importance to us today as it clearly illustrates the lesson the Allies have learned, due to the war. His letter is as follows:

"It may interest you to know that machine shop conditions over here do not differ greatly from those in the states, except that the war has made the people here study their production methods more carefully.

The heavy pressure under which the machine shops of Europe are being operated today has brought about the recognition of the economy and efficiency obtained by the use of the Gisholt Universal Tool Grinder.

Never before have such efforts been made to utilize skilled labor to the very best advantage as there are in Europe today. Hence the heavy demand for our Grinder.

The manufacturers over here realize that they cannot afford to let their expensive machines stand idle and stop production while their best paid workmen go to sharpen their cutting tools, when this work can be done just as well or better by less skilled and cheaper labor.

It is such an easy matter for our customers to chart any of their tool post tools that are not shown on our chart that several have made separate charts of their own tools which of course helped increase their shop production.

In Genoa, Italy, at the Ansaldo Works, I helped them prepare a chart for the special tools they are using, and the scheme has proved so profitable that they now have 10 of our Grinders at work."

This shows the chart used by the boy to guide him in setting his machine. In this connection it may be of interest to state that the standardizing of their tool grinding has worked out so well in the Ansaldo plant, which is a very large one, that they now have 45 of these little

machines located throughout their plant, grinding tools for many men.

In our engineering organization it soon began to show that there were several branches of work which should be taken up by individual engineers, so we have divided the designing and engineering into six different divisions.

One division looks after the design of turret lathes, tool grinders, and horizontal mills. This combination is possible as the demand for horizontal mills is very limited and the work on the grinder has been standardized to a very great extent.

Another division takes care of the Vertical Boring Mills, and simplified lathes. This was made possible due to the fluctuating market for these two machines. When the demand for vertical boring mills fell off, there came a demand for simplified lathes.

Another department looks after the automatic turret lathe.

A separate engineering organization is maintained for the design of tools, jigs and fixtures for use in our own shop with which to manufacture our machines.

The fifth division devotes its entire time to figuring out our customers' problems and the design of tools, fixtures, etc. for use on our machines in the customer's plant. This branch of the engineering is a division of the sales department, in fact is the engineering branch of the sales department as they see to it that our customers secure the maximum results from our machines.

Our small tool business including the Gisholt Solid Adjustable Reamer, Tool Holder, Adjustable Cutter Boring Bar, Chucks, etc., is really an outgrowth of the fifth division, as all of these tools were produced for use on our machines in the customer's plant and have proved so valuable and the demand is so great for them that a separate department is being prepared to take care of their production.

The sixth division devotes its entire time to the engineering problems of the Periodograph, a workman's Time Recorder.

This gives us six different lines of business embodied into one and each department with a separate engineering organization and shop. In other words, it is possible and not at all improbable, that each of these divisions could be and may be expanded into a good sized business by itself. Thus the standardizing of our engineering organization has been so arranged and is now so complete that sudden heavy demands for one class of machines or product will not interfere with the progress of other departments, as the size of the factory permits of this expanse, due to each department being standardized so that much of its work is routine and can be expanded or reduced without seriously effecting any other department.

I have often told our salesmen that, whereas the Gisholt Machine Company is one of the five largest machine tool plants in the states, the size is of absolutely no value whatever to our customers, to our salesmen or to ourselves unless the size and completeness of the plant gives a decided advantage to our customers.

I said we make all of our own chucks. This is because a turret lathe is not complete without a chuck. Therefore, before we made our own

chucks, it was necessary for us to have chucks on hand when the machines were completed or we could not ship the machine.

Due to the demand on chuck manufacturers, by other customers, they could not always give us chucks when we wanted them, so our machines had to stand waiting for the chucks. Our work was completed, but, due to the volume of business enjoyed by the chuck manufacturers, our customer was without the turret lathe; therefore, the necessity of making our own chucks was very clear and we have been making chucks now for several years.

Now to show you how the size and completeness of the plant are of an advantage to our customers and how the standardization of method and equipment have proven of value to our customers, let me relate a little incident.

On February 1, 1917, I remember the day very well, we were enjoying a visit from one of our agents in France. You will remember it was on that day that the Germans declared unlimited submarine warfare which set our French visitor puzzling as to how he would get home.

While walking through the plant as we have been this afternoon, we came to the chuck assembly department. Our French agent asked us if we would undertake the manufacture of some of the simpler or standard type of chuck, such as are used on engine lathes, and stated that, due to the demand for these chucks in Europe, the makers in this country were from 6 to 9 months behind delivery promises on some of their orders and gave little or no hope as to when the orders would really be filled.

Now as you increase the size of a factory, you develop the conditions which we have all experienced on a crowded street car, the larger the car, the more people can be squeezed into it. In other words, "there is always room for one more." So believing that we could do a little more, and that we should if it was possible, to help the manufacturers abroad secure chucks quickly, we undertook to make in addition to our regular line or chucks, some of the standard, 3-jawed, geared, scroll chucks.

Between the 1st of February, 1917, and February 1, 1918, we sold and built some 9,000 of these chucks in several sizes, making deliveries on time as promised, which of course helped the customer very materially, by giving him what he wanted, when he wanted it, which was impossible before by any other means.

There was a time when it was more or less taken for granted that in order to use a Turret lathe, it was necessary to make up a set of special tools, which would be of no particular value on any other machine, and in fact would only apply to the particular piece of work for which the tools were made.

As time went on, we soon found that contained in each of the different sets of special tools were certain tools that were duplicated frequently. We assembled these parts and today build what is known as a set of standard chucking tools, with which a great variety of work can be handled due to the adjustment of the tools and cutters. Note how tool manufacturing has been standardized and how tools are now made up in large lots of a kind at a time.

This plate shows set of tools laid out above the machine and I have

had a reduced size picture of the machine with tools assembled on it, placed beneath them. To give you engineers an idea of the range of work which can be handled with these tools, I will show two slides of drawings of parts finished with these tools.

On the main floor just beneath the room in which we manufacture our customers' tools, is this room in which we manufacture the great variety of tools, jigs and fixtures for all manner of machines which are used in our shop with which we manufacture our product.

Note that the method of manufacture is on the unit assembly principle, the divisions or fences in the back-ground indicate departmental arrangements in which the different units of the machines are assembled. This unit assembly practice as followed by us for a great many years, is the principle which has been expanded by the automobile manufacturers in one shape or another from the little firms who assemble only parts purchased from larger manufacturers, up to our famous Detroit builder, Mr. Ford.

Here is the Thread Milling Machine department. Note as we go along that our shop is arranged by the grouping of like machines. At the rear of this screw machine department is this stock rack. The steel is taken from the cars on a siding alongside this room and stored in these racks until wanted by the screw machine department or required to be cut up for use in other parts of the shop.

As a factory grows in size you can arrange your departments to greater advantage than with a smaller shop. This shows the polishing room to which all the parts that have to be polished are brought. This arrangement permits of having machines especially suited for this work; also ventilating devices which could not be used if the polishing were done in the many different departments where the parts are made. Further, the men who are constantly on this work become experts.

This view will give you an idea of how the small tools are stored, each tool being delivered to the workmen on a check.

There is a big difference between building and manufacture. You must have jigs if you standardize your work in manufacture. You engineers will know that there is a young gold mine invested in the tools.

That Gisholt machines are used on standard lines of manufacture abroad, I want to show you two more pictures. This young lady is the Champion Turret Lathe operator in Manchester, England, and at the time the picture was taken, held the record for both men and women on the production of the famous 3.29 inch high explosive English shell, which are shown on the floor and in the machine.

This is the interior of a large English munition plant and as you see the picture was taken during the visit of King George. Notice there is only one other man in the picture. All of the other workers are women. The machines they are handling are known as our 24-inch, a pretty good size machine, but evidently very easy to operate.

Your secretary has asked in particular that I discuss the question of standardization of equipment and its application to the labor problem, which I understand is the dominating theme of your conference.

The labor problem has always been a big one and will doubtless con-

tinue to be an exceedingly important one, but we are faced with a peculiar situation now, such as was never known before, due to the great number of men, not only in our country, but also throughout Europe, who have been taken from their regular pursuit and put in the army.

Whereas the spectacular part of this great war is being acted on the battle field, in reality we all know it is a mechanical war and the foundation of it all is the machine tool.

You cannot build a battle-ship, a motor truck, a flying machine, a tank, an electric motor, a search light, a gun, a shell, or any other of the implements of war without the machine tool on which to work. Let us go further. You cannot plant grain nor reap the harvest with which to feed our armies and the people behind the armies without machine tools with which to build the implements. You cannot mine coal, mineral, oil or any of the other deposits of nature which are so essential in this war without machine tools with which to build the apparatus used in the operations. Therefore, I think you will agree with me that the machine tool is the foundation on which our success in the war depends and is one of the fundamental elements which are absolutely necessary with which to prosecute the war to a successful and victorious end.

Let us turn from the war for a moment, and see how important are machine tools and the standard practice of manufacture they have made possible during times of peace. Take all that is being used in the war and you have only that which we use during times of peace except that they have been turned from constructive pursuit to destructive pursuit.

The work of building battle ships is the same as the building of merchant ships; the tank is nothing but the large tractor; the armoured car is nothing but our pleasure car or our motor trucks rearranged, etc. Therefore, the machine tool you will see is just as important in times of peace as in times of war. Manufacturing, whether it be the little country job shop or the greater industries such as General Electric, Westinghouse Electric, are dependent upon labor. Just so long as the human element enters so vitality into these problems, just so long will we have to face the problem of standardizing machines and of training people to handle these machines.

Now we have come to the section of my talk which I want to devote to the training of operators as we believe this is one of the most important subjects before the manufacturing world today. The principle involved and the methods followed in our school, we think are original with us, and still they are entirely in keeping with the methods which the government is following in the officers' training camps as well as at the cantonments throughout this country.

For ease of description, I am going to assume that each of you is a manufacturer and uses machines such as we manufacture. Several years ago the true understanding of just what we were selling came to us, and we realized that we had to furnish more than the machine, because when any of you men as manufacturers purchase a machine tool, you really do not care for the machine itself, that is not what you buy, you are really purchasing production, or at least production capacity.

Production from any machine is and always will be dependent upon the human equation; you must have operators who know the machine. They must know what work the machine will handle and how to get the work out at the lowest possible cost.

How can you get this highest possible production at the lowest possible cost? Only by having men in your own employ who know the machine, what it will do, and how to do it.

For many years we have tried to give this production to our customers, by sending our experts into the customer's plant when new machines were installed. This helped to a limited extent as you were able to begin production much quicker than when you started the machine alone. But unfortunately, not many firms had men in their employ who could get the maximum production and keep it up. During the visit of our expert he instructed the operator how to handle the work and how to operate the machine as far as the time and conditions under which his visit was made, would permit.

The foreman and superintendent usually were able to understand the principles of Gisholt manufacturing methods better than was the workman on the machine, but many things demand attention in every shop and soon the manufacturer found his production largely dependent upon the man operating the machine, under which conditions production would usually fall off, due to the limited training of the workman.

All this has been changed, and now each customer may have a Gisholt expert in his own shop and in his own employ. We are now in a position to meet the popular demand in that we train men to get the maximum production from our machines. For a while we tried to train our own men for our customers employ, but it soon developed to be best for the customer to have one of his own men trained for the work instead of getting an outsider.

The advantage of training one of your men instead of taking one of our men, is first because your man is familiar with your shop conditions and your work and second, because most men will sooner or later move back near their home town to work.

To meet these conditions, we have equipped a school in which we train your men in the care, operation, tooling, etc. of Gisholt machines. In this school your men are trained in every detail and when they go back to your shop they know how to get the maximum production, and you will have a Gisholt expert in your own employ.

During the service course your man will be trained in the details of construction of the Gisholt machine, he will know how to adjust and care for your machine, so that delays and loss of production will be the exception. He will be taught how to grind his cutting tools, and this is most important. When he returns to your shop, he will know how to make free-hand sketches, how to plan and lay out his work in advance, and how to instruct other men in the use of Gisholt machines.

The training course covers practically everything he will be called upon to do with Gisholt machines, such as thread cutting, taper turning, drilling, boring, and reaming, etc. He will be taught the value of doing things promptly, neatly and accurately and how to do it.

As mentioned before, we have a separate department in which to manufacture tool equipments for our customers. We are in a position to relieve them of a great deal of their tooling problems and can usually ship the machines fully equipped and ready to go to work.

While we are making up your tool equipment, your man will be taking the service course and can then test your tools on your own work, thus becoming thoroughly familiar with Gisholt production methods on your own work, even before the machines are installed in your shop, which eliminates any delay in getting the machines started when they are installed.

No charge is made for the training; we provide everything required, special instructions, equipment, tools, books, etc. The customer simply sends his man and we train him. This training is offered under two conditions. First, to Gisholt customers, and second we give the training to men as individuals who are not employees but who want to take the work to improve their position in life. Under these conditions there are certain requirements; each applicant must pass before he can enter the course.

One of the men who has been through the course takes the beginner for a walk through the plant. Then he is shown the tools which he will use during the course.

There are some 25 tasks which each man has to perform. As a time is set for each task and a record is kept on the Periodograph, each man is taught the essence of economic production, namely what to do, how to do it, why it is done that way, and to do it quickly. After being instructed in the method of recording his time, his first task is to dismantle the grinder.

Please note that this is a course of intensified training. Everything is figured out ahead of time and no time is lost in guess work. Each student has an instructor with him constantly, so that there will be no time wasted. After having assembled the grinder, the student is taught how to grind his tools, to get the proper make and clearance. This is sufficient for the Tool Grinder.

The student now goes to the Turret Lathe, and dismantles a 21-inch machine. He is taught how to scrape in the bearings on an old machine and the principle of scraping the V's with a surface plate. Then he must assemble, adjust and oil the lathe, after which he must operate it so that he becomes familiar with the function of each part.

He next goes to the 28-inch lathe where he is taught the method of taking heavy cuts. Then he must clean up the lathe, after which he will set up to manufacture the countershaft friction pulley shown in this picture. His work must pass the inspector after which he will operate the machine and make a dozen of the pulleys.

He next goes over to a new motor driven 21-inch lathe where he is taught how to bore out the jaws. Next how to do thread cutting, next how to do taper turning. Next how to set up for drilling, boring, reaming and turning; during this work he will operate the machine for a considerable length of time.

Now we must dismantle the set-up, clean the tools, and then set the

machine up for bar work and manufacture a few cross-head pins, after which he must dismantle and clean up his machine and put the tools away. You will note, we try to instill in each man the spirit of being clean and orderly.

The student then goes into the school office where he is taught how to estimate, and lay out his work in advance, so that he can plan his work before it comes to the machine.

The course of training I have described and shown in these pictures thus far, can be completed by a man who has had 3 or 4 years shop experience, in about two weeks, all during which the man has been actually performing the work. He now starts in as the instructor and takes a new man through entire course during which the new man will be the doer and the man has been through once, will be the teacher. This prepares him for handling other men when he gets back to your shop.

If time would permit, I could tell you a great deal about the benefits obtained through the service course. Suffice to say, the first benefit comes to the man himself and this is most important as he is better able to handle his work and thereby improves his place in life. The next benefit comes to the manufacturer who purchased our machines, as he gets better returns from the money invested through greater production.

But the most important benefit we believe, comes to our nation as a whole, as through this method of training men, we can produce two or three times as much work with the same number of men as it was possible before.

Thus we hope in these strenuous times when so many men have been called to the colors, that it will be possible for the few remaining to make up for those who have gone to defend our home and liberty.

FIFTH SESSION.

THURSDAY EVENING, March 28, 1918.

"MEN REMAINING—SECURING THEIR MAXIMUM PRODUCTION."

Mr. H. Thorpe Kessler, of Rosenwald & Weil, Chicago, chairman.

The meeting was called to order at 7:30 o'clock.

THE CHAIRMAN: Al Jolson tells a story about an Irishman and a Jew who were discussing the subject of insurance. Pat said to Ike, "Ikey, have you taken out any insurance?" Ike said that he had and he asked Pat whether he had taken out any insurance. Pat said, "Yes, I have taken out a thousand dollars' worth," but Pat says to Ike, "How much insurance have you taken out?" Ikey said, "Pat, I took out fifteen thousand dollars' worth." "But why fifteen thousand dollars' worth," inquired Pat. "Ah, Pat," said Ikey, "your Uncle Samuel knows his business. A fifteen thousand dollar man don't go in the front trenches." (Laughter.) That story has only one bearing on tonight's topic, the men remaining who secure their maximum production have as much responsibility, as much a duty to perform as those men in khaki and blue who are serving on the other side and who are in training in this country. There can be no slackers over here among those men who are remaining, and if there are slack-

ers will you pardon the chairman in the suggestion that management itself is to blame. Management should assume the responsibility. If we are to get the best production from a flower, from vegetation of any kind, we must surround that flower or that vegetation with the very best conditions. This is also true of machinery and equipment, even more true of men.

One of the big problems that industry must face, is now facing and will continue to face, is the standardizing of conditions for labor. The employer is truly the keeper of his employees. A few years ago it was the supposition that the relationship between employer and employee was a purely economical one. To-day scientific management has brought home to us the fact that this relationship is a purely personal and an ethical relationship. It seems to me that this topic tonight, the very essence of it, conservation of human capital, the incentive which must be offered to the men, the planning, the study, the organization, the scheduling of all those things which are left to the management, will be discussed by the speakers of the evening. The men remaining will be the second line of defense, which must be kept impregnable. The needs of our boys in khaki and in blue must be supplied by those men who remain. Those supplies must continue until this and other countries are safe from that atrocious monster who has but one policy, rule or ruin. I feel quite sure that the men remaining will not be slackers if we follow the suggestions which are offered by the able speakers who will address us this evening.

"The Relation of the Coal Conservation Movement to the Engineer" is the topic of an illustrated talk by Mr. Joseph H. Harrington, who has been an advisory engineer and a consulting engineer in the City of Chicago since 1902. Mr. Harrington is well known throughout this country for the work that he has done in combustion and all the allied topics that go with it. He is an authority on this work, and he is also connected with the Fuel Conservation Committee of Illinois. It gives the chair great pleasure this evening to introduce to you Mr. Harrington.

MR. HARRINGTON: The relation of the fuel conservation movement to the efficiency engineer is one which appeals particularly to me because I have for so many years been classed as an efficiency engineer. The word efficiency is a little frayed at the edges perhaps, but at the same time the spirit of efficiency is just now coming into its own, and the necessity for efficiency is just now penetrating the minds of hundreds of thousands of American citizens who were total strangers to its meaning before.

Every cloud has a silver lining, and it is pleasant sometimes to be able to turn the cloud inside out and see the other side. If we can extract a grain of comfort from the present situation it must be manifest to the efficiency engineer, because of the fact that his work, his viewpoint and his intent are now becoming so much more appreciated by the general public, and through the efficiency engineer we hope to secure certain results which can be obtained in no other way and which today are vital necessities to the American people.

Now, coming a little closer to the point at issue, the question of fuel. McCutcheon has drawn a cartoon which I will show you later showing that

all our industries and activities grow from a hod of coal, and that is very true. The coal pile and the energy contained therein are one of the prime necessities of life, one of the absolute essentials, just as necessary to our modern civilization as food and raiment. So that we as efficiency engineers are vitally concerned both personally, individually and professionally in this topic.

Coal forms thirty-five per cent of the total tonnage hauled by the American railroads, and in the East where the industries are thickest it has mounted as high as forty-three per cent. It is the largest commodity in point of tonnage of any carried by the railroads in the United States. When you consider that it takes thirty days on the average for a car to make the round trip from the mine to the point of destination and back to the mine, you can conceive of the enormous equipment necessary to handle the coal consumed in America. Last year the actual coal production was six hundred and forty millions of tons. If we had not had the unusual weather and transportation conditions it is more than likely than six hundred and seventy-five millions of tons would have been mined and transported. We fell short some thirty-five millions of tons. Part of that came from industry, and part of it came from the individual. Now unless industry is going to be curtailed again one of two things is necessary. We are either going to mine sufficient coal for our requirements or we are going to use less coal in our industry. The Bureau of Mines is on record as saying that reasonable efficiency will save this country ten per cent of its coal consumed. Privately they will put that figure at a slightly higher point. I think that ten per cent, however, is an absolutely conservative figure. Unfortunately, last year our production was increased, but those of you who burned coal last year will suspect that some of that increase was not coal, it was slate and bone, and the fuel administration recognizing that fact is engaged in an active campaign to prevent its recurrence.

A short time ago Dr. Garfield published his plans by nationwide organization of inspectors, these inspectors to visit the various mines to prevent the shipment of this inferior coal. It is a pity that the country should be deprived of this essential when we have in store almost unlimited quantities of it. That is a transportation problem. The miners of Illinois work on an average of only two hundred days per year out of a possible three hundred. If they could work three hundred days a year they would not have to get as much per day to come out at the same place. The industry would be stabilized, and everyone would be more content. Consequently one of the activities of the administration is to induce everyone, large and small consumers alike, to purchase their coal now. Storage of coal—I am referring now particularly to the high volatile coals of the West, particularly again to the coals of Illinois—these coals can be stored. The rules for storage are simple, and when observed there is absolutely no danger of spontaneous combustion. Consequently knowing that coal can be stored we urge everybody to put in their winter supply of coal at once. That will remove just that much from the service next winter. It will serve to keep the mines busy during the otherwise inactive season, and those who have to buy coal in small quantities from day to day or week to week, can more likely be supplied by the reduced facilities of the railroads during the inclement weather of next winter.

The administration hopes by various conservation activities to save a very considerable amount of coal, twelve million tons in the homes of the nation, forty million tons in the locomotives and steampower plants, six million tons by substituting wood and other fuel for coal, three and a half million by the consolidation of activities, such as combining two ice plants in one town, or letting one run full time at maximum capacity and shutting down the other one; a half million tons by reduction of unnecessary advertising, illuminating signs; a million tons by this daylight saving which is going to make us all get up a little earlier in the morning; six million tons by the natural reduction in certain activities which have been produced by the war situation, a million and a half on the street railways by the cutting out of unnecessary stops, and seventy million tons by a thousand and one other minor ways.

About twenty-five to thirty per cent of all the coal burned in the United States is burned in the domestic furnace, and you can believe me when I tell you that that is the toughest problem from an efficiency standpoint that I ever tackled. How the good housewife or the man of the house is going to practice combustion efficiency between the time he comes down in the morning and the time he leaves for the train is some real problem. The conditions are such that it is almost impossible to save any coal whatsoever, and yet it would certainly surprise you to know to what an extent means have been worked out for solving that very problem.

I promised that I would not go into technical details tonight. I am going to keep that promise even though it is at the cost of some self-restraint, because it is certainly a hobby of mine, but I am not going to bore you with technical details. But the food administration, as you know, has reached the general public through the eye, through the ear and in every conceivable way by posters, advertising signs, four minute speakers and the like. The fuel campaign is somewhat similar. We are getting up a series of posters, a few of which I have reproduced in the form of slides and which I have brought over here for your interest. We are arranging to cover the entire country. I speak now particularly of Illinois because I happen to be more intimately acquainted with our work here. We are organizing the State on a County basis. Every County has a county chairman, and he has that smaller organization through which he works. These county chairmen are supplied with the data, the literature as it comes from Washington or as it is prepared in our home office. Professor Breckinridge of the administration at Washington has prepared a little booklet on the conservation of fuel which is an outline of a series of lectures which it is proposed to place in the hands of speakers all over the country for dissemination. We are trying to reach the homes, the private homes, with information as to how coal can be burned. You have all heard, of course, a great deal about the technical side of fuel economy in the larger power plants. The railroads have done an enormous amount of work. I think I can remember that figure approximately. When the campaign for smokeless combustion reached the railroads of Chicago they appointed some forty inspectors at a cost to the associated railroads of sixty-five thousand dollars per year. The result of that effort was the saving inside the city limits of

Chicago alone of six hundred thousand tons of coal. It merely shows what can be done if we put our shoulder to the wheel and all push together.

It is my object to-night primarily to show you briefly the necessity for the co-operative effort. Now, gentlemen, the situation is even more serious than I have pictured it. The word has recently come from Washington that only two-thirds of your normal anthracite requirements will be allowed you for household purposes. There will be no Pocahontas come West whatsoever. That means that we have got to use Illinois coal in the house furnaces of the West. What that means when you have a small fire-box or hot air furnace you will appreciate after you have tried it. It is a question what we are going to do in the industries. The estimated requirement in this country for the next year by those most competent to state that figure is eight hundred millions of tons. That you should compare with the actual production of last year of six hundred and forty millions of tons. It is very unlikely that production will reach that figure, and there is just exactly one way in which we can keep the wheels turning with the amount of coal that will be mined, and that is by cutting down on the coal that we use for our required production. That is efficiency. And that is a problem of sufficient moment to engage the attention of every man in the United States, every woman who has a house, and every high-school boy or child who attends a furnace. Twenty-five or thirty per cent, as I said, of the total coal is burned in the domestic furnace, and all I can say without making this matter unduly long is that the administration appreciates the importance of such an organization as your own understanding this situation, knowing full well that if you turn your attention to it that great good will come therefrom. We ask you with a full appreciation of the full seriousness of the situation to do what you can both directly and indirectly in disseminating this information, supplying to those who do not have it, printing it in your publications, referring to it in your meetings, so that wherever you may come in contact with others they will carry away with them some idea of the seriousness of the situation and some ray of hope that by intensive co-operation we can get through another winter without any serious trouble and with a united front for the great deeds and the glorious work which the boys across are now doing.

(Mr. Harrington then showed and explained some slides.)

THE CHAIRMAN: This address by Mr. Harrington has certainly been highly instructive and interesting. It should receive the widest spread publicity. The next speaker on the program is Mr. Irving A. Berndt. He needs no introduction because you all know him. He has addressed us before.

MR. BERNDT: Mr. Chairman, ladies and gentlemen: The program is full this evening and the time is short, so I will spend very little time introducing my paper. However, there is just one thing I would like to say, and that is that at a conference like this we have very little time for details. Quoting Mr. Emerson, if he will allow me to, in his talk yesterday his conclusion is that after all methods are secondary to principles, and I warn you that this paper is nothing more than a paper of propaganda, which, however, I think has been the key-note of most of the papers and will be the key-note of this entire conference.

"MAXIMUM PRODUCTION FROM UNDRAFTED LABOR,"**By IRVING A. BERNDT, MANAGER BETTERMENT DEPARTMENTS****JOSEPH T. RYERSON & SON.**

Out of the war, which is bringing up grave problems, immediate emergencies and abnormal conditions, to each and every man in every walk of life comes that perplexing question—how can I do my bit? How can I serve our country in its present need?

I believe that the loyalty and patriotism of our people even to a man can hardly be questioned. Each one is ready, even anxious to serve. But the problem is upon us suddenly and we are forced to make decisions with very little previous preparation.

Speed is a necessary adjunct to a successful military programme and our men have been called upon to say quickly whether they will go and fight or remain and work. It is not natural for a peace loving people to immediately adjust itself to a war programme without these problems, particularly because our country has never been organized essentially for war. Because of the very peace, democracy and freedom of action and speech which we love and thank God for and for which our boys are even now fighting in France, it is becoming more difficult for each one of us to find his right place in the present emergency.

I am not regretful of this condition. It is right no matter what problems it brings before us. It is a condition justified by the hundreds of years of progress and peaceful development which our country has behind it, and I am optimistic as to its solution. We will all soon find our best work and will do it well. We will all soon be in that fortunate position in which every true advocate of efficiency principles believes, the right place for the right man, and when that time arrives and each man is trained and working to his maximum capacity, we will justify the democracy and freedom under which we live with an efficiency which neither ruthless military government nor autocratic rule can oppose successfully and our boys will soon come "marching home" victorious.

This condition has thrown our industrial workers into three broad groups.

A—Those in fighting service.

B—Those working on war requirements.

C—Those carrying on normal industrial activities.

First, there are those who have enlisted or who have been selected by our government to serve in one or the other of the fighting services. The justification of this service certainly cannot be questioned. Who is there among us who will say that they should not go? Who among us does not envy them the glorious privilege of fighting or even dying for our country? Who among us does not regret that he too cannot go at once into this same service and who are unwilling to shoulder the burden caused by their absence? Certainly no one in our ranks.

No matter what problems this brings us, no matter what it costs in extra effort on our part, no matter what heart pangs we suffer in their personal loss, we must stand by and cheer them in leaving for this great pa-

triotic and honorable service. They must not be deterred; let us glory in them.

Second, is that group which is composed of those who, while not actually in the fighting service, are entering government service either directly or indirectly in the ranks of industrial workers actively engaged in the production of war supplies and equipment.

Our Government has since the beginning of the war come face to face with a production and industrial problem second to none other existing at present or any other in history. It has been compelled to establish standards and specifications for millions of uniforms, munition and war supplies; it has been forced to plan and arrange for the production of these great volumes of commodities and it has been compelled to arrange for plan and provide equipment of all kinds, in great numbers and with immense capacities to transfer, transport and ship these large tonnages and great bulks of material. To do this it has been necessary to draw upon our best men in industrial ranks for this direct service.

The large production programme of the War Department has brought great pressure to bear on the producers of munition, guns and all war supplies and those already existing have been required to double and triple and in fact multiply many times their productivity. Many new producing organizations have been developed to facilitate that programme and all of this great intensive activity has taken from the ranks of industrial workers hundreds of thousands of men.

With all of these war activities the country still must prosper industrially. General lines of commercial and industrial activity must continue on a normal basis and must even be increased to supply not only our own demands but those of our allies. Our third group is devoting itself to these.

No doubt the question repeatedly presents itself to many in the third group as to whether or not each one is doing his duty and no doubt many have found it difficult to answer satisfactorily to themselves, because in each American heart there is a cry for opportunity to directly, aggressively and openly show patriotism and willingness to work in the defense of those principles of right and justice which our forefathers gave us.

Our sense of responsibility and our conscientious appreciation of the need for combined and united action in order to win this war urges each one to long for an opportunity to take an active part in it.

This must be recognized and respected among this third group and while they are compelled to patiently await their turn at home, carrying the normal responsibilities of homes, dependents, and industrial or commercial duties, while in their blood stirs the desire to do or die, every possible inspiration must be given them to reconcile themselves to this condition and all possible steps should be taken to make their work most effective. As much consideration should be given them as those in the first and second class and no conditions should be permitted which would tend to weaken their morale or make their personal problem more difficult.

To repeat our classification briefly, we find our industrial workers divided into three Groups:

- (A)—Those in fighting service.
- (B)—Those working on war requirements.
- (C)—Those carrying on normal industrial activities.

Considering these groups from the point of numbers probably the following analyses will be formed based on the immediate situation. It is not only possible but highly probable that before long a round 2,000,000 of men will have joined our actual military and naval service. This number represents the first group.

Government authorities advise us variously that it takes from 4 to 6 men in industry to keep one in the service. Considering an average of five for this work, we find 10,000,000 men work on war production. This represents our second group.

Deducting this total of 12,000,000 from the approximately 30,000,000 workers normally engaged, we have remaining in our third group but 18,000,000.

The men in the first class are already doing their best. We cannot hope to influence their effectiveness, but we can and must stand back of them a solid mass and we can and must organize our productive groups in the second and third classes so that they will always keep pace with the requirements of our fighting men and assure them at all times that our efforts are to be co-ordinated and united. We must also actively and vigorously prepare for further drains on our ranks of industrial workers for this fighting service by developing an ever increasing efficiency of those at work, so that as demands are made on industry, she will be ready and willing to unselfishly continue to give up her best and youngest men and still keep pace with requirements at home.

The second group must be educated and inspired to a complete appreciation of the possibility of the valuable service they can and are rendering in winning this war and must be coached and trained to a higher efficiency and greater productivity in the actual production of war supplies.

The third group, that army of 18,000,000 men left to carry the burden formerly carried by 30,000,000 for although some of our industrial activities have temporarily ceased, demands have increased in other directions and particularly because we now must help in supplying our allies with necessities, that third group, must first be reconciled to their position, second, must be brought to an appreciation of the serious necessity of an ever increasing productivity and finally must be assisted and trained for this greater efficiency.

And in all this great and necessary work, in the solution of this problem of human relationships, who is there who can be more useful, more effective, or more definitely influential than the industrial engineer?

It might be well to stop here for a moment to consider what is meant by an industrial engineer. This profession is so new that there is as yet no standard definition acceptable to all and we are privileged to define it in many ways. Without hope of developing a definition entirely satisfactory I will offer one which may serve the present purpose.

In my mind the industrial engineer is an individual who by training, experience, education and personal attributes is qualified to study the prob-

lem of organization, personnel, equipment, buildings and all features of management control in industrial or commercial organizations, can analyze present conditions, apply remedies where necessary, improvements when possible and finally establish standards which are acceptable, practical and permanent. This definition necessarily brief, cannot attempt to cover in any detail the entire functions, but offers only a broad interpretation.

I wish to say to you men here present who by virtue of your presence are at least interested if not actively engaged in industrial engineering, that there never has been such an opportunity for the ideals of scientific management, the principles of efficiency and the theories and practices of industrial engineering to prove their worth.

Never before has their need been so emphatic as at the present moment. At no time has the cause been so worthy.

I also wish to say that in my estimation if we do not prove our case during these times we never will. It is now or never. If our principles and ideals are correct the present situation must justify us in our belief provided we stand back of them a solid mass firm and steadfast in this belief and confident of the outcome.

To prove that the industrial engineer and manager is above all others qualified to cope with this problem of labor conservation does not seem difficult.

Consider for an instant our ideals. For years our cry has been elimination of waste, reduction of waste effort, conservation of man power and now those words save, conserve, produce and economize which were during those times the hobby of a few, the self-assumed problem and responsibility of a small group, are now the slogan of a nation, the motto in every household and the creed of each man and woman. Are we not well drilled and well equipped in our ideals?

The principles of efficiency and the practices of industrial engineering have taught us long before the present emergency that one of our biggest problems is the human factor and we have been studying, experimenting and applying solutions.

Without attempting to detail all the methods of approaching and influencing this problem which we as a group are capable of applying and with which you are no doubt familiar, is it not true that we can do a large work in developing the productivity of those industrial workers remaining and may even, if our work is extensive and intensive enough, be able to replace those leaving entirely by standardized methods, well planned operations, conservation of all waste effort, highly improved conditions and equipment, careful labor selection, comprehensive labor education, intelligent labor control, etc., etc.

This is a real life size job for you and for me and if any one is worrying or impatient because he has not yet been called let him think of this a moment and take hold with a realization and satisfaction that this work is not only valuable and worthy but absolutely necessary for the welfare of this country and the winning of the war.

Let us consider for a moment the more intimate and detailed factors and problems which the question of labor conservation brings before us

and then see what solution the industrial engineer offers and is capable of applying.

The first problem is that of careful selection and proper placement of workers. At present this is ever becoming more and more important because since our best men physically are being taken those remaining must be properly placed and each one carefully selected for the work he is to do. Also older men must be recalled into active service and properly placed.

The physical examinations during the draft are by all odds far more rigid than the most intensive examinations any employer uses in selecting workmen. This means that for the army at least our best physical workers are being used.

Washington is continually calling for our best skill and brains to be given up to war production. Does this not mean an immense readjustment in the placement of men?

Here the industrial engineer can and must intensively apply those remedies which are so successful in so many cases and are not to be considered experiments any longer.

The old hire and fire method must be entirely wiped away. The foreman already burdened with more responsibilities than he can efficiently handle, must no longer be permitted or be expected to handle this function; unless he has had an opportunity to study each job and understand its requirements in the way of man power and ability, and then has time to carefully consider each applicant and also has ability to analyze his qualification, how can he be expected to place men well. It is not possible for the foreman under average conditions to give these problems their proper attention.

We must have more centralized employment departments concentrating on this problem, applying practical character analyses plans and making as scientific and practical an analysis as possible each man for each job. These departments must collect and have available standard requirements for each job.

We should have complete co-operation among such employment departments in each community and in fact in the state and if possible a system of transfer should be developed and provided for, so that the men could be shifted intelligently from one plant to another where he can do work for which he is best fitted.

A paper can be written alone on this subject of careful selection and centralized employment and these factors can be justified not only from the necessity of the present emergency but from the economical and moral side as well, but I cannot expect to more than urge here that this is a real problem and that industrial management does offer real practical and tangible solution.

After the men have been properly selected and intelligently placed, we next come to the problem of educating, training and coaching them, inspiring them, supervising them and assisting them to a higher productivity and a greater efficiency with an elimination of waste effort, energy and time. It seems hardly necessary for me to emphasize the point that industrial engineering does and can cover these features in its solutions. Have not all these questions been definitely studied, analyzed and thor-

oughly investigated under the subject of organization in industrial engineering? Surely all of us are familiar in some way or another with the success of functionalizing organizations and foremen and just what this alone can do to solve this problem.

Well functionalized organizations and particular functional supervision, provides for the necessary attention to each of the detailed labor problems which under this plan is supplied in each case by an individual specialist capable and trained to do that work especially well.

Then, too, in this connection, when I even suggest time and motion study as a factor I open up another field which can only be touched upon here. Here we have a mechanism, definitely originated and initiated under scientific management, positively and almost solely identified with industrial engineering. What purpose does it serve?

With it we can study the job to be done, the work to be performed and the equipment and methods which are to be used. As a result of analyses of such information collected we can improve the methods and conditions of work as well as the equipment and tools used, so that the work can be done more efficiently and with less waste effort and fatigue to the workmen.

As a result of this development standards of manufacture can be set up which dovetail into every other factor. They can be used by the employment department to learn the job requirements; they can be used by the functionalized organization to train and educate the workmen both for their present work and for advanced positions. They can be used to teach new men brought into the organization to take the place of those drafted. They can be used to more carefully plan and schedule processes. They can be used as a basis for a more equitable wage payment to workers. They can be used as an incentive for the worker to attain this justified greater efficiency. Has not industrial engineering made a real contribution in this one principle and mechanism alone, and is there any other plan offered or advocated or in use which will do so much toward solving this problem?

If there is it has not come to my attention and we are certainly all anxious to learn of it.

In order that each worker be fairly judged and properly and intelligently considered for promotion or advancement, analytical operation and production costs must be recorded and used. Industrial Engineering has from the beginning advocated this and is now prepared with well thrashed out principles and practical methods to develop these methods and records.

Consider for a moment the question of mechanical efficiency and standardization. A field all in itself being specialized upon by some of our best known and most able industrial engineers. Here thru research, time and motion study and investigation, plus design and invention an enormous influence can be wielded to replace drafted labor and increase the production of the undrafted. Industrial Engineering offers this also.

No true Industrial Engineer is not a safety propagandist and here too a field of activity is opened enormous in itself. Between thirty and forty thousand industrial workers are killed annually and a quarter of a million are injured. We must and can reduce these figures.

I have only mentioned the important factors which are considered under industrial engineering and which factors can and do influence the conservation of labor and the increase of production of the undrafted men.

That other possible solution of replacing men by the use of women workers is a topic all by itself but I do not wish to leave my subject without some mention of the possible effectiveness of industrial engineering on this movement.

This will throw great numbers of untrained, unskilled workers into industry, necessarily less physically able, much more sensitive to fatigue, much more in need of training and education, much more in need of mechanical assistance and bringing into industrial management all sorts of new problems of supervision, handling and discipline, working conditions, etc.

They must be paid on a basis equal with men, but how can this be done unless standards of production are properly set up?

Their proper placement is very important. They cannot be used for all work, but how will we be sure of which unless analyses of the requirements of the jobs are made. True, of course, that in some work it is self evident that they can be used, but there may be scores of industries and thousands of operations which they can perform which only a scientific analysis and study will disclose.

Does not all the work of the Industrial Engineer apply here emphatically? Surely the practices and mechanism he offers will be invaluable in this connection as nothing else can.

And if the foregoing has interested or, what is more to be desired, really influenced you, a justifiable question is what can be done now? What immediate steps can be taken?

My answer is that we must advocate, advertise, apply, promulgate, preach, promote, and practice both intensively and extensively the ideals of scientific management, the principles of efficiency and the theories and practices of industrial engineering.

There must be a great broadening of the vision of our industrial managers, employers and all manufacturers. Surely this problem must be solved by the application of those principles of right management and waste effort elimination which have in so many individual cases been successfully applied, rather than an unintelligent competition for the services of the remaining workers, resulting in more serious problems of labor relationships and compensation, or the limitation of production and consequent prolongation of the war in Europe and abnormally high prices at home.

The solution is the immediate extensive and intensive study of efficient management, the detailed analysis of existing conditions and the intelligent application of best principles and practices in each individual organization. But this must be done quickly.

It is a fact that to bring the average organization up to an acceptable efficiency it has taken variously from two to ten years. We certainly cannot even wait the minimum period. Therefore, there must be a more general education of every one concerned to secure more immediate results.

A wider propaganda must be carried on, a more intensive campaign promoted.

One of the most important reasons for the long time which it takes to introduce, develop and complete an individual reorganization and installation of scientific management is the fact that on every side the human factor must be considered.

In the first place, the advocate of efficiency and management who is consulted and probably permitted to apply his work must first educate and inspire the management and administrative officers of the concern involved. From then on he is put on the defensive, regardless of his position in the organization, not only as regards his particular application, but what is most important and seems less necessary, as regards the principles involved themselves.

If once and for all the management were sold, and could be kept sold, on the principles, the actual work of application would be greatly facilitated.

In addition to this, he must deal with the human factor in every step he takes, represented by the individual worker whose daily work is affected by the changes he proposes. These men, from the laborer to the shop superintendent, must each one be educated, inspired and be given sufficient incentive to co-operate and help him actually apply his solutions, and, what is most important, he must keep coming back to these individuals, each time defending his positions and the ideals and principles he represents, and must take time to continue their education and keep up their enthusiasm by one means or another.

What really takes the time, therefore, is the continual and current education of the great majority of men in the organization, including not only the workers, but the management and executive officers as well.

If it were not necessary to do this, and if the industrial engineer coming into an organization found that he was not continually put on the defensive by the workers, but rather found workers who were interested in their own problems and their solution, and a management entirely convinced as to the accuracy and justification of efficient and scientific management, ask any engineer of experience, and I wager he will agree with me that the necessary time to bring this work to an acceptable basis will be cut 70 or 80 per cent.

I do not expect or believe that such a condition can be immediately consummated, nor do I think it possible to bring up all organizations to their highest efficiency in time to make them all most effective in the present emergency. I do feel, however, that much more can be done, and greater strides can be made, than are being made under the present program.

Keeping in mind, therefore, that the big problem is the education and inspiration of all individuals interested in industry, regardless of how menial or important their relation is, I suggest that this is the problem which must be and can be more intensively considered.

FOUR CONCRETE SUGGESTIONS.

To this end I believe there must be greater activity in every direction, and suggest the following possibilities:

1. All trade organizations already existing should concentrate on a study of the principles of efficiency, using the considerable literature already available and securing the best intelligence included among their own ranks on this subject. Where in a given trade no such organizations exist, this purpose alone would be a real reason for their organization. The more successful and most intelligent industrial leaders in each group must come to the front and help to educate their associates, realizing that the present is a time for utmost co-operation.

2. I believe that every influence should be brought to bear which will tend to continue the existence of all the great educational institutions which are now dealing with this subject so that they will not only continue to do all they have been doing in educating a future generation of managers, but also to do a more intensive and also extensive work in educating the workers and the present executive thru night courses, reading courses, etc. Such institutions as are capable, but have not yet taken up this work, should be influenced toward doing it.

3. Organizations of all kinds, including efficiency societies, executive clubs, chambers of commerce, labor organizations and the like should concentrate on this problem and not only reach out in their own localities to educate the uninitiated worker or manager, but should urge new organizations like their own in other communities and co-operate with them after they have been organized. Here again the leaders must take upon their shoulders the larger responsibility and give freely to their neighbors of their time and knowledge on this subject.

4. All of the above should not only be advocated but rigidly enforced and thoroughly encouraged and facilitated by state and national governments. Such commissions, boards or bureaus as are necessary should be organized to promote this work in each locality, each industry and among all groups, not overlooking that most important and most numerous group—the workers.

The Treasury Department of the United States offers in its Thrift Stamp plan a possibility for saving nickles, dimes and quarters. Why should we not have a campaign for saving minutes, hours, days, in production and foot pounds of manual labor and effort.

We have a food conservation campaign, a food conservation board and director. We have a fuel conservation campaign and a board and director, why not a popular labor conservation campaign and a labor conservation director and board.

We must popularize our movement. Time will win this war we are told, and if this is so, it means the time in which we do things. This means nothing more nor less than labor saving and increased production.

We have not sufficient time to teach our theories but the thought can be inspired. We have not time to popularize our technic, but we can popularize our ideals.

In all the above those who have up to this time been pioneers in the movement should realize that this is the time to set aside all idea of per-

sonal gain, all idea of intense competition, and all feelings of personal prejudice, and give freely to this cause as much of their time as possible, and all of the knowledge that they have gained thru their experiences.

I am not advocating in this that any of this educational propaganda should have to do with detailed methods or individual solutions or applications. This would hardly be practical, nor would it be fair to those who have, thru their own individual effort, taken distinct steps ahead in their particular line of endeavor. In all cases I think it must take up the broad principles involved, teaching their righteousness, inspiring their use, and after this leaving the intensive application to each individual.

Summarizing, I am advocating the extensive education of large groups in the value of industrial efficiency, taking this responsibility away from the individual industrial engineer, so that he will no longer be on the defensive, but can apply himself wholly and solely to the application of these principles, having at all times the complete co-operation of every individual concerned, from worker to manager.

This propaganda, this broad educational work is not only a possible line of activity for each one of us interested but to my mind an absolute duty.

Thru such organizations as this and others like the Society of Industrial Engineers and the Western Efficiency Society we must move quickly and decisively. Recognition must be gained for our principles, our practices and our profession.

Scientific management, industrial engineering, efficiency or whatever you have a mind to call it has not been universally accepted I hardly need tell you, although it has been successful in so many cases that it can no longer be considered an experiment. You are all familiar with the big advance and many successful installations during the last several years. Even the government departments have not in all cases considered it worthy of application and use in their work. This opens a big opportunity for real educational work which is as broad as you make it and is all inclusive.

Each one has an opportunity to influence all of these results. We must make up for our loss of man power by most highly standardized, and most highly specialized efficient methods of production. If, therefore, in our profession as industrial engineers we are capable of doing this work well it is our patriotic duty to do so and to teach all others how they can do likewise.

England has since the emergencies brought about by the war, discovered its great inefficiencies in production and is actively engaged in applying remedies. Comparisons recently made on many products show that she is forging ahead of us. Why should we wait for any further emergencies. Let us do it now.

We are being told a great deal about the "War after the War" and are advised it will be one for industrial supremacy among all nations. Now is the time to prepare for this conflict. Efficiency principles and scientific management originated in this country. We are told that European countries including both our allies and enemies are studying them intensively and applying them extensively.

Shall history repeat itself and like the European developments of our original inventions, the submarine, the machine gun and the aeroplane, will we permit some one else to develop our discoveries in this direction before we do so and even use them against us? If this is not to happen we must do more than concentrate on our own problems.

Each one who has learned and applied the principles of efficiency must tell his neighbor and in every possible way spread these teachings as faithfully and consistently as was the Gospel of Christianity. This is therefore not only a duty in the service of our country during the present emergency but is more far reaching and will effect the permanency of our industrial status after we have won it.

And in all this certain things are required among our own ranks. There must be a complete co-operation. We must be united among ourselves, and no matter how many differences of opinion exist among us as to details, the main theory and principles must never be lost. Rivalry must be friendly, competition must be co-operative.

With this great task ahead of us, there certainly can be no doubt in our minds as to our duty and possible service even though we have not, either because of absence of opportunity or thru force of circumstances, been privileged to join the fighting ranks or direct war organization of our country. A big job is before us which we can attack with a justification in its righteousness, an assurance of its utmost necessity and complete pride in its performance.

Although we do not hear the thunder of the cannons or see the smoke of powder over here, as our noble boys are doing over there, we can still throw ourselves into our work if we are alive to all of its possibilities realizing that we too are fighting many a real battle at home and making distinct progress for Uncle Sam.

Absolutely nothing will prevent our United States from winning this war, or from coming into its own industrially and commercially after the war. Can the industrial engineer help? I say yes, in a thousand ways. Will he help? I again say yes with the realization that they are to a man back of me in that reply.

THE CHAIRMAN: Directly pertinent to the subject of Mr. Berndt's paper, he pointed out very definitely that there is no division of responsibility and duty of the men remaining and the men in more active service. At this juncture we are going to change our program just a trifle and call on Col. A. D. Kniskern. I take very great pleasure in presenting to you Col. Kniskern, who will address you on the subject of "Cutting Out Red Tape."

"CUTTING OUT RED TAPE."

COLONEL A. D. KNISKERN.

I have been asked to talk to you to-night on the subject, "Cutting Out Rep Tape." The "rep tape" referred to is, presumably, so-called, "Government Red Tape."

After spending, in ancient days, four long, and what then seemed extremely hard, years at the United States Military Academy at West

Point I was assigned to my first station as a Second Lieutenant of Infantry, 140 miles by stage from the railroad in Montana. There I spent the first winter of my Army life in a log shack, chinked with mud and lined with muslin. Soon after joining I went to the Quartermaster's Warehouse and drew my first quarter's allowance of stationery. There were two or three pen points, a penholder, pencil, some paper and envelopes, and among other things, a stick of sealing wax and a spool of tape. This tape, as it was the property of the government, should have been "red." As a matter-of-fact, it was a dark pink. I have yet to see any of it that had a good red color.

I was curious to know why this "red tape" was issued to officers. Later, when I became recorder of every board of officers that was organized in the post, and had to bind together the sheets of paper on which was written laboriously in long hand, the proceedings of these various boards, I found a good use for this tape. Those were the days before typewriters, paper fasteners, staples, etc.

The first time I tried to punch a hole through fifteen or twenty sheets of paper with the blade of a jack-knife, then tried to insert through these holes a piece of tape that frayed at the ends and tried to tie the whole thing together neatly, the result obtained was, to say the least, lacking in neatness and beauty. As time went on, however, and as I gained in experience, I found that the red tape, if properly used in fastening the sheets together, became a neat, satisfactory and very serviceable agent in holding the pages of my proceedings together.

This tape was unsatisfactory only so long as I was unskilled, punched the holes with the dull blade of a jack-knife, and stuffed the tape through the holes with this same blade. When I became skilled in the job, used a real punch of the right sort to make the holes and used a needle to draw the tape through the holes, there was no longer any difficulty and the tape became a very serviceable and satisfactory article with which to perform the job.

This tape of which I have been speaking—the red tape of my youth—was strong, serviceable, effective and served its purpose perfectly. Its purpose was to tie things together, to bind them and hold them in place.

It is undoubtedly true that because the real red tape bound things together, this other thing about which I am to talk to you of the "Cutting Out" has been also called "Red Tape."

This other thing is circumlocution, delay, indecision and general inability to get from one point to another by the straight line that separates them. Just when it began to be called "Red Tape" no one knows. Surely he who so misnamed it must have been a very poor judge or appearances or he would have perceived that he was thus dishonoring the best friend the business world ever had.

Let us get this thing rightly named before we go any farther. The correct name is "Inefficiency."

I am not real sure that the government has a monopoly on "inefficiency" either. We all see this characteristic wherever it manifests itself in government operations, for we are all watching the government whether we are for it or against it. It is not for me to say that inefficiency exists outside of government circles, but I have a suspicion that it can be found

in other places. Why do you not call it "Red Tape," when you see the effects in your dealings with a business house? Just why apply it solely to government operations? However, if you must consider it a government monopoly, why don't you insist on cold and silent death for it instead of assuming that it is a necessary function of the government?

While Uncle Sam's credit is good and he is known to have unlimited resources, still he is looked upon by most business concerns as a poor customer and one not at all desirable. The reason for this attitude on the part of so many houses is that they consider the old gentleman very particular and extreme in his requirements, very cantankerous and very slow pay. But, as a matter-of-fact, if they once get acquainted with him, learn his ways and understand why he is particular, and at times severe, and further, that he can and will pay at the close of a transaction as quickly as any of their best customers, they will all change their minds and be glad to have his name on their books just as often as they can get it there.

In view of the fact that the government has thousands of agents attending to its multitudinous business transactions, it is necessary that certain rules and regulations shall be complied with and that there shall be applied certain well-defined lines of procedure in order that the government, its agent and the contractor, may have their individual interests protected. Now the thing that irritates the business man and makes Uncle Sam at times an undesirable customer, is not these rules, regulations, forms, etc. but the manner in which his agent attends to the details pertaining to them. The average citizen applies to these two factors (the rules, etc., and their application by the agent, the well-known term "red tape."

It is very unfortunate that the minds of business men became confused about this, and that the term "red tape" has been applied as it has. Because, as a consequence, there has grown up the feeling and belief that the fault that prevents prompt transaction of government business lies in government requirements.

Have you ever analyzed these government requirements or sompared them with the requirements of any big business? If you ever do, you will find that they are all necessary and essential, and further, that they contain nothing that should interfere with a prompt, intelligent and satisfactory transaction of business.

When you meet with delays, circumlocution, "passing the buck," etc., in attempting to transact government business, instead of finding the cause to be "red tape" it will be found to be the inefficiency of the government's agent. Either the agent himself lacks plain business sense, is afraid to take responsibility, has poor judgment, or has some other disqualifying defect, or else the man "higher up" possesses one or more of these defects.

There is in Chicago a Depot of the much abused Quartermaster Corps, United States Army, that is transacting as agent for Uncle Sam's business that runs into the millions. In the year just ending, the volume of business has grown in dollars and cents about 300 times. The number of its employees has increased 60 times. Its transactions have increased so in

number that the clerical force is now 40 times greater than before the war. It is handling in enormous volume several lines of business in which, before the war, it had had absolutely no experience.

If any of you want to transact any business with this Depot you will find your way absolutely free and clear from obstacles; you will be directed straight to the man who handles that business; and you will find him clothed with full authority to deal with you. However, if you like to transact business in a leisurely manner, the institution will not please you because its key note is "get quick results." This institution makes prompt payments to all its contractors, all bills being paid within ten days except for some fault over which it has no control.

Now, the institution just referred to transacts its business strictly in accordance with all the rules and regulations that Uncle Sam has made. It uses all the "red tape" that is provided for. It does not, however, let the "red tape" become tangled, nor does it permit "passing of the buck," "circumlocution" or any other form of inefficiency.

In my reference to Uncle Sam, I gave as one reason why many men did not like to do business with him, the fact that he was very particular and extreme in his requirements.

Here again must we consider the relations of the government, its agent and the contractor. You will admit that the terms and conditions must be so clear that there can be no disagreement between the agent and contractor as to their requirements. There is a further necessity for this clearness, and that is the right of all competitors for a particular item of business to know and to feel that they all stand on the same ground.

If several competitors submit propositions covering a given transaction, it is important not only that their proposals be on the same basis but also that the winner shall be required to deliver on that basis and that the losers shall know that fact.

One result of Uncle Sam's "being particular" is that every man who desires to do business with him knows that he has identically the same rights as any other man, and that the winner must "deliver the same goods" as the loser would have been required to deliver had their positions been reversed. Inefficiency too often defeats the government's purpose here by conducting transactions so that all interested feel that they are not getting a square deal.

The government intends to give every man a square deal. If he does not get it, the fault usually lies with the government's agent either on account of his inefficiency or dishonesty. It is rarely by reason of dishonesty.

Being an Army man, it is but natural that in this talk I should have in mind more particularly the relations between Uncle Sam and the business man, as they affect Army transactions. And in this connection, let me call to your attention another feature of Uncle Sam's activities that sometimes displeases the contractor. I refer to the matter of inspections of products during process of manufacture and when finished.

Every patriotic man in these troublous times wants to give his best to the government. Now and then there may be a business man who

would take advantage of the situation and "beat" the government in a deal if he could. But this type of man is rare and practically negligible. The business man of to-day can succeed by fair means and, with rare exception unless a man can succeed in business by fair means he prefers not to succeed at all.

Inspections then, are not made because it is felt that the seller does not want to deliver the goods. They are made because it is known that human nature is disposed to carelessness. A man who performs the same task over and over again cannot be expected to keep his every action up to the mark set for him. Superintendents get careless. Laborers get careless. We all have "spells" of carelessness. There are many causes for defects of one kind or another, and all traceable to natural conditions in which the question of honesty is not involved.

In the Army we must consider the requirements primarily of the soldier in the field. Incidentally, of course, we consider the needs of the men in camp or garrison. But whatever we provide for the man in the field we must know shall be just what it should be when it reaches him.

After a soldier has "toted" in his pack an extra pair of shoes which he drew for the very purpose of replacing the pair on his feet, when they were worn out, it would not conduce greatly to his comfort if he found a nail protruding inside the shoe, an improperly sewed seam or any other defect that would injure his feet.

You want to feel that your boy, who has made the supreme sacrifice and is "somewhere in France" will be well-cared for and that his food, his clothing; in fact, everything he needs, reaches him in the best possible condition and as nearly perfect as it can be. And Uncle Sam wants the same thing. So he expects that his agents, who are procuring these supplies, shall carefully inspect them and assure themselves that no careless workman can do the soldier at the front an unintentional injury.

I have made reference to the Chicago Depot of the Quartermaster Corps. Perhaps you will be interested in a few of the details connected with the work of that organization.

It is the duty of the Quartermaster Corps to provide the troops with food and clothing, to pay them, to transport them by wagon, motor truck, railroad or ship. The Corps builds waterworks, sewers, roads, walks, wharves, docks, etc. It furnishes and maintains animals and harness for all wagon transport; it provides cooking utensils, mess equipment, rolling kitchens, etc.

It is the problem of the Quartermaster Corps to purchase the thousand and one articles necessary for the proper performance of its duties, to transport these articles and distribute them to the men.

To show you something of the problem involved in providing food for the men here are a few figures:

An army of a million men requires transportation for 5,000,000 pounds of ration articles per day. This is about 4,000 carloads per month. One million men require for one month about 33,000,000 pounds of meat, fresh beef, bacon and canned meats, 1,000,000 lbs. of lard, 937,000 lbs. of butter, 37,500,000 lbs. of flour, 2,400,000 lbs. of roasted and ground coffee, 3,000,000 lbs. of sugar and large quantities of salt, pepper, milk, etc.

In addition to the food there must be provided tons of clothing, tons of ammunition, of fuel, etc.

A portion of the work of the Quartermaster Corps is being performed by the Chicago Depot.

When war was declared, the Depot had about forty civil employes, three officers, one motor truck, and occupied 35,000 square feet of storage space. Its total business was about a million dollars a year. It was furnishing about 1,000 men with their food supplies and a small number of articles of other kinds, and was furnishing the bacon and canned meats for the army. Today this Depot has about 1,200,000 square feet of floor space and is building 1,280,000 more. Its main office requires 37,500 sq. ft. It has 24 motor vehicles which are used in the work pertaining to inspections and other business of the Depot. It handles some eighty cars of freight per day. It has over 2,500 civil employes. Its monthly civilian pay-roll is about \$120,000 as compared with about \$4,000 last April. From a force of eight experienced clerks it has expanded by bringing in new and inexperienced men to a force of about 325 clerks. Its force of inspectors has increased from two men to three hundred. There are 96 officers on duty and of these officers all but two are Reserve Officers coming from civil life. It has been necessary to train the clerks and inspectors and to familiarize the officers with Army methods, while the business was increasing by leaps and bounds. We are paying out about twenty-five million dollars per month. We are handling about 500 bills per day. We have going contracts with about 1,500 firms, and make about 75 purchases per day. Our bills are paid, as a rule, within ten days. Just now, we are a little behind this record, but "There's a Reason." Deliveries of goods to our warehouses have about doubled in the last six weeks.

You know ever since this thing began I've felt like I did the day I learned to swim. I was a little fellow. The big boys took me out over the deep hole and told me to "swim or die." Then every time I got my head out of water some big fellow pushed it under. So every time I begin to think my troubles at the Depot are over, along comes an avalanche of new work or of supplies and down I go again.

In order that the quality of the articles delivered on contracts may be kept up to the requirements of the contracts, a force of inspectors is maintained. As an illustration, in a purchase by the Chicago Depot of packing house products, inspectors under the jurisdiction of this Depot are on duty in the packing houses at all times while the supplies are being prepared. When bacon is purchased our inspectors see the fresh meat when it is cut from the carcass, they see it when it is put into cure, have access to it at all times while it is in the cellars being cured, see it while it is being smoked, witness its packing, weighing and marking. In the case of canned meats, like corned beef, these inspectors examine the carcasses from which the meat is to be cut, they witness the cutting of the meat from the carcass, watch it while it is undergoing cure, while it is being trimmed, and cut up ready to be put into the cans, see the cans filled, verify the weights and see it packed in the cases and made ready for shipment. So that every pound of meat which goes out to the army from the packing houses is known by the Depot in Chicago to be absolutely

all right both as to quantity and quality. It is our duty to see that it is prepared in such a way that when it reaches the men in the trenches, it will be just as good as it was the day when it was prepared. In addition to the Inspectors maintained for packing house products, in Chicago, this Depot has under its supervision meat inspectors in practically all of the packing plants in the middle west.

In connection with the work of the Chicago depot, let me call your attention to the fact that in addition to the rapid and enormous growth to which I have alluded, there is the further fact that we have started and are conducting several different lines of business to which every one of us was a total stranger at the beginning and anyone of which would be an enormous business by itself.

This tremendous business is handled by an office organization which is divided into fourteen divisions. Three of these divisions are so closely related that one officer is able to direct them and there are therefore only twelve heads of divisions. These twelve officers with a total of twelve assistants, transact the business of the Depot under the direction of the Depot Quartermaster. The other seventy officers are all on inspection duty.

The salary list of the Depot, including that of the 90 odd officers and 2,400 odd civilian employees amounts to about one-half of one per cent of the total volume of business. The man who has guided this business from its infancy and is still directing it draws the munificent salary of \$6,000 per year, and the other salaries are in proportion.

I believe you will pardon me if I proudly call your attention to the fact that thus far no one has had occasion to charge the Chicago Depot with a single failure in the performance of any one of its functions. This splendid record has been attained through the whole-hearted co-operation, staunch loyalty and steadfast purpose of my assistants.

The manner by which the support and wonderful success of my assistants has been obtained is shown by the following outline of my ideas of the duties of an executive. It is an extract from a letter dictated by me and sent a few days ago to my son.

"No man can be a success as an executive in a large business who allows his time to be absorbed to any degree in matters of detail pertaining to the routine work of the business. The most successful executive is he who can develop the best policies, and at the same time delegate to the men under him the necessary authority to enable them to handle, without interference from above or below, every detail which comes within the sphere of their responsibility. Any man who has not the courage and the strength to give to his assistants full authority is necessarily a weak executive and, what is still more important, will, with equal necessity develop a weak corps of assistants.

It is a well-known fact that a man who is not allowed discretion will sooner or later become a mere automaton and will be afraid to take any responsibility whatever. Failure to place authority in the hands of men develops automatons, and this reacts on the man responsible for such a failure by his being loaded down by his assistants with details which they have not the courage to handle themselves.

An executive should never be afraid that the men to whom he delegates authority will make mistakes in exercising their authority. If the executive will but give the matter a moment's thought he will realize that he himself in the execution of those duties imposed upon him will make mistakes. It should, therefore, be expected by him, and he will take it for granted, that his subordinates will make mistakes, and in his relations with his subordinates he should be glad to have them make an occasional mistake because it is proof that such subordinates are actively engaged in handling the business assigned to them. As it is much easier to see mistakes when made by another than it is to see those made by yourself, let the source of those mistakes be with your subordinates where you can more readily detect them.

If you have not already done so, you should at once group the various activities of the yard so that you will have as many groups of duties as you have subordinates. Your care in making these groups should be to avoid as far as practicable bringing together in one group duties which are not closely related. The more closely related the duties in any group are, the easier can a subordinate in charge of that group attend to those duties. Having arranged these groups, you should assign a subordinate in charge of each of them and explain to each one, preferably in writing, what his duties are, sufficiently in detail to give him a complete and full understanding. At the same time, each subordinate should be informed that he will be held to a strict accountability for the performance of his duties and that it will be necessary for him to work out his details as well as to take full responsibility for the results. He should also be informed that he can be at liberty at any time to consult with you as to what action he should take, but you should be careful if such a consultation takes place to allow a subordinate to develop his plan of action before giving him his instructions, and if possible, you should accept his plan of action rather than modify it or substitute one of your own. The reason for this is that by such acceptance it not only will inspire him with confidence in himself, but you give him the future incentive to try and work out the solutions of the problems which belong and arise in his group of duties. It is much better to accept the subordinate's proposed plan of action and to reserve for a later occasion a discussion of that plan of action, telling him that while his plan served its purpose, at the same time if he had made certain changes, he would have gotten better results, than it is to kill his enthusiasm at the outset by telling him his plan is no good. I make it an invariable rule when my subordinates come to me for advice to ascertain first what they think should be done, and if it be possible, I always assent to their plan of action; although, there are times when I believe some other plan would get better results. The object attained here; namely, inspiring the man to have confidence in himself and so materially increasing his mental growth, is so very important that the results that would be obtained by turning him down would not warrant the depressing effect that it will have on the man.

I assume from what you have said, that you have your force lined up in some sort of an organization, and that you have in that organization various departments or divisions, and that you have at the head of these

various departments or divisions a man of your own or some other's selection. If this be true, and you are not requiring the men of these departments to attend to every detail pertaining to their departments, you are failing in your duty as an executive. You should not touch a thing that you can turn over to one or more of the heads of these departments. In making this transfer of details, there is another error that an executive is likely to fall into, and that is, requiring such a multiplicity of reports from his subordinates that he absorbs time that should otherwise be applied to the actual work of his department, and so the executive should be careful to absorb the minimum amount of time belonging to his subordinates, limiting himself solely to such knowledge and means of obtaining that knowledge as has to do with results.

I recommend to you most strongly and most urgently that you absolutely forget the matter of details pertaining to the various departments in the yard. Don't bother with them. It is much better to err in the other direction. If your mind is filled with details which ought to be attended to by your subordinates, you have absolutely no time for a consideration of general policies and general problems, unless you work overtime—and a man who continues to work overtime day in and day out will sooner or later arrive at a mental condition when his powers begin to fail and from that time on he becomes more and more addicted to the habit of looking after details.

You have most wonderful powers of concentration. This is, however, in your case, a source of weakness, because of the fact that you are unable, or at least find it difficult, to spread your thoughts over a number of subjects. In other words, you become so interested in the solution of any particular problem that you pursue that solution continuously and to the neglect to a greater or less degree of other problems which are running alongside the one that your mind is concentrated on. Now this habit, if it be a habit—or characteristic, if it be a characteristic—is extremely weakening to a man who seeks to be a successful executive because of the fact that it creates a tendency in that man to interest himself in the details pertaining to one of the departments under him almost to the exclusion of the other departments until the one department in which he is then interested has arrived at a solution of the problem. You must let, or rather require, the men of your departments to solve their own problems. Insist on it; and if you have a man who is unable to solve his own problems, secure another man in his place. But remember, that the human mind is so constructed that in the solution of problems it requires practice, and the more practice it has the more easily and quickly it solves problems and the more often it secures the correct results. So a subordinate who may at first be slow, inaccurate, and perhaps ineffective, in the solution of problems will, by the very force of nature itself, gradually improve if he be required to exercise those powers that are essential in getting results.

Of course you know that you are occupying an extremely important position for a young man. It is a position of which you can be extremely proud. But in view of the fact that you are practically yet in the beginning of your career it is highly important, and I might say, eternally important, that you proceed along those lines which promise success. You

cannot hope for success, and you can expect only failure, unless you are 'Boss of your job' instead of allowing your job to be the boss of you."

MR. CHAIRMAN: Chicago has every reason to be proud of its Depot Quartermaster, and our sons and other generations will read this letter from Col. Kniskern which he has read to us.

The third speaker for this evening, Miss Frances A. Kellor, sent this telegram of regret which is addressed to Mr. C. E. Knoeppel, "Regret exceedingly that shall be unable attend conference as am detailed Washington on matters that cannot be postponed. Frances A. Kellor."

The next speaker this evening is Mr. F. M. Simons, Jr., chairman Board of Directors Western Efficiency Society. He is going to talk to us on "Scientific Management a Necessity of Modern Organization."

MR. SIMONS: Mr. Chairman, this paper is very brief and will take about twenty-five minutes to read. I know the hour is late. I feel that Mr. Berndt gave us a message that cannot be over-emphasized tonight when he says that this is the greatest opportunity that has ever come to this movement in which we are so interested. If we are to take full advantage of that opportunity we must take the aggressive, the offensive in pushing the movement as far as it can be pushed at this time, and I believe that that can only be done by having full and unlimited faith in the movement itself, and I would like to bring out a little different angle of that situation than has been brought out heretofore.

The movement, while it has been accelerated by the war, while the war is the immediate emergency, has back of it a force very much greater than the war itself, and an opportunity which is even larger than the opportunity offered by the war. It is to that that I would like to direct your attention in this paper.

"SCIENTIFIC MANAGEMENT A NECESSITY OF MODERN ORGANIZATION."

I. INTRODUCTORY.

This is a time when abiding and unlimited faith in the essential power of correct principles is necessary if we are to preserve our balance and go ahead quietly and effectively with the work which is committed to us. The application of this to the great political and moral issues for which we are fighting on the European Battle Fields is evident. It is equally true in our own field of industrial engineering.

This paper does not deal with technique. It is a statement of a creed which has kept the writer going many times when the first line trenches which we are all holding in our pioneer work as engineers of a new profession seemed lost to our old enemy Kaiser Status Quo and his Chief of Staff, General Arbitrary Decision.

This creed may be stated as follows:

1. We are given such an opportunity for service that we dare not fail.

2. Our movement is based upon principles so sound in economic back ground that while we may fail as individuals because of our own mistakes, the movement itself cannot, and will not, fail.

This paper will first develop in a simple, brief way the nature of the opportunity which is before us and then will sum up the sure background which is ours.

If perchance some day when your particular sector of the line seems momentarily threatened, the thought here presented may bring courage and renewed faith, the purpose of this paper will have been fulfilled.

Our Allies today are holding the lines in France because of the moral courage that is in them. This courage is born of a clear knowledge of the opportunity and need of the hour and because of the heritage of right which is back of them.

May we be as steadfast and courageous in our humbler work because of our faith in the movement which we represent.

II. OUR OPPORTUNITY.

We must at the outset state one of the corollaries of industrial engineering, an appreciation of which is necessary to our understanding of the point of view which this paper presents. This corollary is the effect of industrial engineering upon industrial control.

In terms of control, industrial engineering has a double significance: First, we must understand what it means from the standpoint of the Internal Administrative Control of a single business or plant, the problem with which most of us as industrial engineers are dealing. Second, we must realize the bearing which it has upon the greater problem of Social Control of the Industry of a Nation or a State, or if you will, a League of States.

We are all familiar with the first problem—Industry, today is seeking administrative control through standardization of the various factors or instruments (inanimate or animate) of the business, that is, through standardization of location, buildings, equipment, materials, labor types for particular jobs, and even type of organization for particular businesses. We might call this kind of standardization Economic Selection or Engineering Selection.

We are seeking control also of the administrative use of these instruments in the day by day running of the business; that is, we are seeking standardization of methods and systems for the control of the use of the many instruments animate and inanimate which we have properly selected.

These are the daily problems which we are meeting in our own work, and these we can readily grasp.

There is, however, a larger aspect of control toward which industrial engineers consciously or unconsciously work. We are working toward a more intelligent social control of industry in two ways—one from the outside, the other from within.

First, let us briefly look at how we are affecting social control from without. Modern industry is complex, so complex that the modern state has typically failed to intelligently control it. Sometimes it has let industry alone. Sometimes it has interfered. Rarely has it wisely directed and adequately controlled it. There are, of course, many reasons for this. No

problem of this kind is simple, but one great difficulty has been the fact that the state has not understood what the engineer might call the "mechanical structure of modern industry." The typical American legislator, for instance, has been a politician rather than a business man or engineer. This legislator has seen a great whirling intricate machine. He has watched this machine grow in power and size and has then seen it move in a direction which to his mind endangered the public good or his own special interests. Our politician instead of carefully studying the mechanism to the end that he might intelligently guide it, has all too often not touched the steering devices at all nor even realized that they existed, but has instead thrown a monkey wrench into the gears with disastrous results.

The engineer has no right to criticize unless he stands ready to assist. What is needed is engineering analysis applied to these larger industrial problems, and it is not by accident that since the outbreak of the war one great American engineer has been intrusted with administrative power so sweeping as to virtually make him a legislator as well.

Neither is it by accident that two other great American engineers, one of whom is with us today, have taught American business men that their industrial problems can be broken up into relatively simple factors, each of which can be studied and controlled.

The writer believes that when we secure a proper perspective of these pioneer days of industrial engineering that we will come to realize that the great service which Mr. Taylor and Mr. Emerson have rendered to Industrial America will not be the Taylor-White process, nor the successful installation of the Emerson System at any one plant or any group of plants, but the great idea which they have driven home—namely, that engineering analysis can be successfully applied to both the external and internal control problems of industry, as well as to its mechanical problems.

Once this is fully appreciated, we will not only see industrial engineers directing industry from within, but directing it also from without. Moreover, the two problems of external and internal control are very closely related. More intelligent analysis of the cost and production factors of a business will not only serve as a guide to greater individual production and better individual plant profits, but on this analysis will be based wiser legislation which will direct and control and not destroy.

The Industrial Engineer is working for social control of industry in a still more vital way, a way which is perhaps not so tangible, but, nevertheless very real.

We are doing our part in making business a profession. A profession may be defined as an "occupation in which the amount of financial return is not the only, or even chiefly accepted measure, of success." This is not saying that the balance sheet will not be looked to, but it is saying in the words of a successful Chicago manufacturer, long a member of the Western Efficiency Society, that the state should "allow no plant to live which is not making a product useful and beneficial to society and making it in such a way as to afford good working conditions and wages to its employes and a good profit to its stockholders."

This may seem idealistic, but the writer cannot refrain from here stating his belief that this matter of professionalization of business has a

greater significance than is now generally realized. Indeed, it may be said with some confidence that the most lasting gains in securing of an adequate social control will be made along these lines.

Within the modern Era, society has attempted to regain its lost hold upon industry by means of what may be called negative, and as has been shown above, even destructive devices. What is here suggested is that we have in this ideal of business a profession, a great and ever growing force which will eventually work out a new form of control through the building up of a code of professional ethics.

Such a movement is by nature bound to be of slow development, but will be hastened by the work of the industrial engineer.

Truly a great opportunity is before us.

III. THE FORCE BACK OF US.

But we have more than an opportunity for service ahead of us. We have 500 years of consistent industrial development back of us.

For this movement has been consistent and irresistible, and unless some new unforeseen development should completely change the direction of modern industry, the laws which have been operating in the past will continue to operate.

Your patience would, no doubt, be tried if this paper attempted to develop or explain the laws referred to. The facts, however, are exceedingly interesting, and are, no doubt, familiar to you.

What I shall try now to do will be to arrange these facts so that they may best explain the point which it is desired to make; namely, that industrial engineering with its great task of industrial control is simply a part of a great and irresistible economic movement, and that, therefore, all we have to do to win is to acquit ourselves like men, and all that Kaiser Status Quo and General Arbitrary Decision need to do to lose is to continue to blindly fight a force which they cannot possibly hope to control.

The facts are these:

General.

Industrial Development runs in a cycle, in which administrative control (our problem) is the crucial point.

First: Expanding markets force improvements in manufacturing technology.

Then: Improved technique allows, nay, (granted the capitalistic spirit working out under a competitive regime) forces an enlargement of the unit of industrial organization. (The "plant," the "establishment," the "business.")

That is: the new technical mechanisms tend to demand concentration of production for the utilization of their economies. The problem is one of increasing units of product in order to secure decreasing unit cost.

Next: The business world tends to push the advantage thus secured to its limit of usefulness.

If the problem were one of technique alone history seems to show that technological research is capable of keeping in advance of the demands of industry upon it.

This appears, however, not to be the case and the true situation might be stated as follows: Practically, the size of the industrial unit is conditioned not alone by technology, but by a combination of factors which may be listed as follows:

First—Technology.

Second—Possibility of administrative control as conditioned by the development of the art of administration and the educational status of the worker,

Third—Commercial and financial strategy. That is to say, mere size may pay from a commercial or financial point of view (entirely aside from and even in opposition to productive efficiency as conditioned by technology and the development of administrative control.

Because of this factor of commercial and financial strategy, business tends to push the size of the industrial unit beyond the point of manufacturing efficiency which is limited because of the factors of technology and the possibility of control.

At this point (granted the market, and in the main for both England and the United States the market has rapidly been expanding throughout this period) great pressure is being exerted to make it possible to bring the size of the unit as limited by technical and administrative control up to the size desired because of commercial and financial reasons.

For reasons which cannot be here discussed, the technical factor takes care of itself. The existing state of the art of administration hence becomes of great importance in such a period because it alone is holding back improvement and enlargement of the industrial unit.

When a stress of this kind bears on the administrative factor, a new industrial structure may be developed or the old structure may be modified in such a way as to improve the possibilities for control.

Specific.

Prior to the birth of the "spirit of industrial enterprise" we find man organized under what has been called a "co-operative household system" involving no market in the modern sense, but in which the various members of the group produced co-operatively for the group, with instruments and materials shared by the group. The method was wasteful, even for the immediate group concerned, and failed still further in meeting the intergroup needs, such as they were.

Then the cycle gets to work, and soon a situation develops which forces industry to change its methods of Administrative control, and presently the "handicraft system" develops.

Under this system (with its attendant conditions of immediate custom market known personally to the craftsmen) each craftsman became the responsible head of his own production. He owned his tools, equipment, and material, and immediately supervised such labor as was necessary. He was his own purchasing agent, mechanic and salesman.

No system has ever developed a more responsible control plan than this. Qualitatively it was perfect.

Its limitations very soon became apparent, however, once our cycle began to work, and before long a new change was demanded.

Again the stress came upon administrative control.

Markets widened, became less immediate, and needed organizing. Then technique developed, and equipment became expensive for the small handcraftsman, etc., down through our cycle.

Finally, the stress became too great, and the system went the way of the older orders, first the so-called "domestic system" and later, after further changes, the modern factory system gradually coming into its place. We have not arrived at the years 1760 to 1775 and "the Modern Factory System!"

About this time industry became so diversified and complex as to make it impossible to follow it as a whole. We shall, for the remainder of our rapid survey, select as a typical case an industry often called the "index of business," the iron and steel group. Within that group (still too large and diversified) we shall choose the "machine tool" trades. Omitting all detail we may say that by 1857 a series of machine-tool inventions had come in answer to the expanding markets of the time and the standardized character of that new market demand, and "large-scale production" ("mass production," if you will) in its modern sense was technically possible.

While time limitations forbid any general extension of this abstraction, it will serve to make the process which was taking place more understandable if we note what happened to that important machine tool, the lathe, during the period 1760-1860. From 1760 to 1800 Great Britain opened up her home markets by building a great chain of canals (1767-1770) and roads (see general road act, 1773, etc.) and at the same time through her newly acquired sea supremacy, assured her manufacturers of a steady continental and colonial trade.

In the light of our "Typical Industrial Cycle" it is interesting to note that the lathe, which had not changed materially for over a thousand years, began rapidly to develop. Technique was taking care of markets.

In 1793 Samuel Bentham took out his basic patents on what would now be known as "machine jigs and fixtures."

Then, in 1802, came the slide rest, the true inventor of which is not definitely known.

Next came what was to America an epoch making event, the granting to an American inventor, Stone, of the patents on the turret lathe (about 1858).

Finally in 1873 we find the record of the grant to Spencer of his automatic screw machine patents.

From the old foot or hand propelled, no-carriage lathe of 1793 to the 1873 forerunner of the uncanny Cleveland automatics, Brown & Sharps, National Acmes, etc. of today. What a jump! Here is material for a fascinating history, but, as Kipling would say, "that is another story."

The important thing for us to note is that once the inventions (of which the lathe series is a type) had made mass production possible, competition made it imperative, and the industrial world came to regard tonnage as the all important factor in profit getting.

The factor of commercial strategy now comes in as noted in our cycle and great stress is therefore placed upon the development of administrative control. At this point, as would be expected, our part in the process begins, and the main job at present of the industrial engineer is the tightening up and improvement of administrative control through standardization of the factors of production and standardization of the methods of using them.

In passing we should call attention to the cost accounting development of 1890, and to the systematization movement following 1893, and especially to a period of integration and concentration following the chartering of the United States Steel Company in 1902. The expansion of 1902-1907 had a part in the cycle also, and finally came the panic and the following lean years.

Mr. Taylor and Mr. Emerson and their associates have long been developing a new form of control. Business men busy with their immediate problems were long unconscious of the bigness of the situation which was developing and it was not until the newspaper notoriety attending Mr. Brandeis' statement before the Interstate Commerce Commission in 1910 that the industrial world which had been for some years trying to increase the effectiveness of administrative control, gained the notion that here was the new form of control which is needed.

If this outline of facts is correct, there is no question but that in the most direct and practical way Scientific Management is the last chapter in a long series of orderly and irresistible events.

IN CONCLUSION

If you agree with this, the second of our main points is gained; namely, that back of our movement stands a long history of consistent development which will sweep industrial engineering on to success.

The only question is, "What part will we as individuals play?"—a question which is after all not important so far as the movement as a whole is concerned.

This history also has a lesson for the unprogressive executive. He can't "buck" a movement of this kind. He has but two alternatives—understanding and using the forces at work for his own advancement—or going under.

Let us be of good faith. The whole swing of industrial history is back of us, and an unparalleled opportunity lies before us. The medieval ideal of despotic and arbitrary force will be crushed in industry as in politics, and we will have our part to play, in the re-organization, which is bound to come, a re-organization which will usher in an industrial as well as a political democracy.

On to the task!

THE CHAIRMAN: When Mr. Simon's paper is in print we will study it with a great deal of interest. The subject has been presented in a very forceful manner.

On motion the meeting adjourned.

SIXTH SESSION.

FSIDAY MORNING ROUND TABLE DISCUSSION.

March 29, 1918.

"MECHANICAL EQUIPMENT—ITS FUNCTION IN
REPLACING MEN."

"MEN REMAINING—SECURING THEIR MAXIMUM
PRODUCTION."

Mr. John R. Shea, of the Western Electric Company, chairman.

The meeting was called to order at ten o'clock.

THE CHAIRMAN: This round table, we want you all to feel, is an informal one. That is, we want you to get up and tell your thoughts right straight from the shoulder without any reservation. As each one wishes to address the conference, kindly step forward and give your name. In that way we will become better acquainted and feel more free to discuss the various topics.

In starting I think we might follow somewhat along the line of the topics as they were given yesterday afternoon and evening. I will now call for volunteers. You know this should be a regular Quaker meeting. When the spirit moves you just rise and come forward.

MR. DWIGHT T. FARNHAM (consulting engineer, St. Louis): Just to start something, I will bring out a point or two that may interest some of those present. This subject is what the English call the allocation of labor. When Mr. Farnham was over here he had with him a man who was known as the chief allocation officer for England, as I remember the account. His particular work was to decide where man power could be used to the best advantage. That is, if one man was running a piano factory and there was a munition factory across the street that had not any men the men would be induced to go where they were the most needed. In that connection I don't know just what has been done in this country. I have not been able to find out whether we have got to the point where we have done anything definite in regard to it or not. But at the same time I think it is a good thing for industrial engineers to consider the various reservoirs of labor.

Our rough work and some skilled work, as you all know, has been done mostly by the foreign born. About thirteen per cent. of the inhabitants of this country are foreign born of various sorts. By the way, the foreign born, as many of you know, who have been working in the rougher industries, are getting pretty scarce. In addition, last year some of the more far-seeing concerns began to tap the reservoir of negro labor.

There are about ten million negroes in the country. That brought about a good many problems as to how to use the negro labor. I do not want to get into racial prejudices or anything of that sort at all. I think it is enough to say that where we resort to what was referred to yesterday as forcible feeding with negro labor in a community we get into a great deal of trouble, as some of the East St. Louis riots bore witness last year. But when there is sufficient vacuum so that it is evident to every-

body that this labor is needed, there is this immense reservoir, as I said, of ten million negroes in this country to call upon.

Some of the larger eastern coal companies brought them in last year, and as one of the employment managers said to me, they simply come in and work for a half hour and turn around and walk right out again. They could not hold them to the labor. They did not stay. They simply stirred everything up, they could not get any work out of them and they had all sorts of trouble.

One large public service commission made a study of the situation and they decided that there were certain characteristics of the negro that had to be taken into account, one of them being what many of us who have Scotch blood in our veins might call improvidence, but when you study the negro you will find that the one who is improvident today is only because of his transplanting, and that under the conditions that existed one hundred years ago before they came to this country they would not have been improvident. There is no use saving anything when you are living in the jungle where the climate is going to spoil it, and therefore you must not accuse the negro of being improvident with the same scorn that you would accuse a white man of being improvident.

This commission discovered this trait and they got a lot of negroes to work for about twenty-five per cent. less than the current rate by paying them every night. That suited them exactly. That was mostly on digging. It does not take a great deal of training to dig, and consequently they worked very well. But most of us who are working in industries where a certain amount of skill is necessary and where turnover is really a serious matter, do not want that type.

Some friends of mine had just such a problem as I described to work out. They had a labor turnover of about seven hundred and fifty per cent. That was during 1915. During August, 1916, they had a labor turnover at the annual rate of nine hundred per cent. They were going out with motor trucks and picking up the scums of the streets and working them just simply to keep their skilled men busy. It is necessary to have the unskilled labor to keep the skilled men working. Last year an employment division was organized and a real study was made of the matter.

Upon investigation it was found that there were certain things that take place every year. The Italians, upon whom they depended for this rough labor, began to go out on railroad work in July and August when the railroads were trying to get their work done before winter came on. It was almost impossible to hold them then. It was found also that the negro had a tendency to go South for the cotton picking, which occurred in September and October. Also a great many of them like to go home for Christmas. This investigating division therefore conceived the idea of taking advantage of this racial flow, as you might call it, and so when they began losing Italians and other foreign born they replaced them with negroes in the early summer. Of course, there was some feeling among the foremen against the negroes. They don't like them naturally, and when the winter comes they won't stay, and they can't get them to go to

work on piece rates, and the foremen made these and all the usual arguments which come to the minds of men when they are doing their arguing based merely on feeling rather than on a study of facts and conditions.

However, this plan was tried out last year and as a result, in spite of the fact it was a fairly hot summer and in spite of the fact that labor was scarce, the turnover last August was just half of what it was the previous year, the negro labor being increased from nine per cent. to about fifty per cent. in this particular industry.

When winter came on the negro laborer dropped down to about thirty per cent., but at the same time Italians began to come in for the winter, so that when the negroes went South the Italians sought employment, and the labor turnover, instead of being about seven hundred and fifty per cent. has run, even through all this cold weather, a little less than two hundred per cent., which is very good for this industry.

In trying to do that sort of thing it is necessary to make a study of the negro characteristics, and that is a thing which industrial engineers can do. You have to broach that sympathetically and tactfully.

A lieutenant commander in the navy with whom I was discussing the subject a while ago—and by the way he was a man who had the efficiency flag on his battleship; he was an engineer officer during one year—stated that they had engine rooms which were manned by negroes. He said that they did quite as well as the engine rooms which were manned by what he termed the German squareheads. Of course, their efficiency has been well known and well advertised. He said they needed a special handling. He said there was something about an Irish boss that was just the thing which the negro needed. An Irishman would give them a certain amount of blarney which suited them, and if they misbehaved he would be pretty severe with them, so that this mixture of liking, admiration and respect which the Irish boss inspired seemed to be just the thing for the negro.

It is necessary to give the negro more supervision than you do the foreign born. He has been taken care of by the southern planter in the past and is used to coming around for all sorts of things. To show you what I mean, in a plant where one foreman is needed to twenty foreign born, one foreman would be needed to perhaps ten or fifteen negroes. You start a bunch of Italians on some work, we will say loading a freight car with miscellaneous products, and they will do something like this: They will, perhaps, take a look at it—this is assuming that there is not a great deal of supervision—one will go and get a plank, another will go and get a sawhorse, and another will go and get some sheet-iron; they will have everything ready in about ten or fifteen minutes and go to it. Take a bunch of negroes on the same job and they will stand around and have a lot of discussion and finally after very much head-scratching one will go and get a plank and then they will have another discussion, and then someone else will go and get a sawhorse, then more discussion, and eventually they will get their wheelbarrows and possibly get a piece of sheet-iron. They will take forty-five minutes to get started while the Italians will get started in ten or fifteen minutes. That is what I mean when I say that somebody has got to do their thinking for them.

Then they have another peculiarity. If one Italian slows up on the

gang the rest will go after him and tell him to go on and hurry up, while if one negro slows up the whole bunch will slow up. Of course, that makes it very difficult to work them on piece rates.

It became necessary in this particular industry to train the foremen and instruct them. Out of fifteen or twenty foremen there were only two or three who were at all in sympathy with the work. The rest of them had to be trained. What we had to do, without making this too long a story, is shown by the fact that in about seven months it was possible to get negroes to earn a thirty per cent. premium on their day rate, that is, working on a piece-work basis, as compared with when they started they did not do enough to make wages at all. Of course, they were paid in each case their day rate, but that was simply done by sympathy and understanding and bringing in men who knew how to handle the negroes.

That is a subject I wanted to bring up because some of you may have to face the same problem within the next year, and it can be done, but I want to warn against forcing them in.

There is one other thing that I want to bring up which perhaps has to do more with the use of mechanical equipment. As we all know, the railroads are very short of cars; it is very difficult to get sufficient cars now, and a lot of cars that are in use have to be taken out for repairs. As a result the government has asked all manufacturers to be patriotic and get the cars out of their yards as quickly as possible, working on the theory that if you hold a car twenty-four hours on the trip that takes ten days it means ten per cent. of idle car time. If you hold it in your yard two days it means twenty per cent. idle car time, or a reduction of ten per cent. in the country's car supply, if everybody is doing the same thing.

A great many manufacturers have tried very hard to get cars out as quickly as possible. It is easy enough in a plant where you are getting in and out five or six cars a day to simply load or unload whatever comes in and get the cars out. Where you are getting in twenty, thirty, forty or fifty cars a day it is a rather serious matter. It is a good deal to keep your head and know where you are going to place every car and be sure you are going to unload that car when you have it placed and have the men there to unload it, and all the other things that go into loading and unloading cars.

One firm I happen to know about were working very hard to cut down the length of time the cars remained in their yard. The best they did any one month was about eighty debits. That means that there were eighty cars which were kept in the yard over twenty-four hours, in spite of the fact that they had good foremen and were doing everything that possibly could be done to get those cars out as quickly as possible. A plan was worked out whereby there was systematic follow-up installed, which consisted in the first place of pre-determining all the conditions. That is, finding out ahead of time what was coming in and what they could do with it and having everything all set before the cars came in. In addition to that, all places where cars could be placed were numbered; station numbers were put up all over this yard, which was about a twenty-acre yard. Then a priority sheet was used, which showed just which car had been in the longest and which, therefore, should have the greatest attention.

I won't go into this thing any more in detail, but the result was that the first month that the system was in effect there were just two debits, which was a reduction of ninety per cent. in holding the cars. The system was well enough thought of by Mr. Gray, the director of transportation division of the United States railroads, so that it is being tried out in a couple of large plants now. A full description of it will appear in the Industrial Magazine in May and in case anyone is interested in that plant I will be very glad to give further details. (Applause.)

MR. S. W. FISHER (Rochester Railway & Light Company, Rochester, N. Y.): Having a direct bearing on the efficient use of the men who remain and do not go to war, I think you will be interested in a very successful experiment which we are conducting in Rochester. We speak about the untapped reservoirs of man labor. I have not heard mentioned here, although it is perhaps uppermost in a great many minds, that there are a great many very competent and very efficient men who are scattered in little towns. We have gone out there after them.

The Simonton Anderson Company in Rochester are making three-inch cannon for the government, and another corporation of somewhat similar name are making shells. They figured that they would need between three and four thousand men in addition to the supply which we have in Rochester. There we have about sixty-five thousand workmen. Rather than rob our industries that were already in a great many cases working on war contracts of various kinds, the manufacturers in town subsidized a central employment bureau, securing Mr. Booth, who is well known in this part of the country, to manage it, and he has circularized the adjacent cities and towns within a radius of one hundred and fifty miles, telling about the advantages which will accrue to a person who takes employment in Rochester and in this particular factory. We are fortunate in having ideal home conditions out there, good water, good parks, good churches, schools and all that which go to make the home life of the workman worth while. This gun factory is paying standard compensation and arrangements are made to facilitate the coming to Rochester of men who might be thinking about coming but who needed just a little stimulus to decide them. The thing is working out very well indeed. The men are coming in and are being put to work in the proper locations and the other industries which are working on war contracts are not being upset and disturbed.

Just a word as to the employe who becomes discontented and wants to leave. You might just as well let him go and get into work in another concern, if he feels that he is bound to go. But oftentimes by sympathetic understanding of conditions surrounding a man you can get him to stay and be contented, and you can let a stranger go to that place where he expected to go, and get away with it very nicely.

There is one other comment I want to make on the efficiency of those who stay. In the company that I represent we publish a little monthly magazine and in that now we are laying great stress on aid to combat the high cost of living. It means a good deal, I want to tell you, in these times. The advancement in wages does not in hundreds of cases corre-

spond to the increased cost of living. To cite just one illustration of my point of view, last month we ran a story on the purchase of goods, groceries, in bulk rather than in packages. Without slamming any manufacturer whatever, it is a fact that certain kinds of crackers cost you at the rate of one hundred dollars a barrel for flour, and there are other things in more or less the same proportions. In general it is much better for workmen to make their money go as far as they can and their wives often can do quite a little saving along that line.

I might, if you are willing, bring in just one comment on the discussion which we had yesterday in regard to the employment of women. It was so interesting that I did not butt in at the time. There we do not feel that we should put women in until we have to, but in a great many industries we are employing one or two women in certain departments to get ready for the crash if it comes. We want to have a nucleus around which we can build an organization. That is working out very well. For instance, in my company we have employed one woman as a bill deliverer, who goes from house to house delivering bills, and she will learn the subject and learn the routine, and if we cannot get enough older men, which we are trying to do, if we are compelled to use women, we will have one who knows the game and will start the others along. But we do not feel that it is a fair deal to put into a man's job a woman until we cannot get the man.

We have raised our age limit. We had a sort of a dead line. That was not arbitrary, but you know how it is in all industries; you do not hire elderly men. But since the war we have passed that up and we find that a great many clever, capable fellows who are elderly and who show it, at the same time have got some of the pep of youth, and we find that they can get away with it very nicely. (Applause.)

THE CHAIRMAN: I wonder if Mr. Booth could tell us something further. Mr. Booth is also from Rochester.

MR. R. C. BOOTH (Rochester, N. Y.): I am glad to be back in Chicago, because this was my home before I left for Rochester about a year ago. I am very glad to have this opportunity to bring to this conference the greetings of a sister organization, the Industrial Management Council of the Rochester Chamber of Commerce.

Our Council is somewhat more local in character than either of the two organizations which have collaborated in this conference. It is a subsidiary organization to the Chamber of Commerce, although financed by forty-three plants, it is really an efficiency organization within the Chamber of Commerce. It is separately financed by dues which are paid on a per capita basis, according to the number of employes on the payroll of the company. The payment of dues by each concern entitles it to representation in the various groups. We have systematized our work in such a way that we have these groups composed of executives, who govern the executive policies of the various concerns represented, the cost accountants, the production method men and the employment managers. Each group has regular meetings and has speakers from the outside who speak with authority on the particular subject at hand.

We are constantly making investigations and researches in the town, and our secretarial staff makes it a policy to get out among the various forty-three plants and confer with their representatives in the particular group. Our cost and production secretaries will confer, of course, with the cost and production men in these forty-three plants. We find that this co-operation and this functionalizing has been of great influence and great assistance in these war times. It has made possible a degree of co-operation which never would have been possible otherwise. Particularly has this been true in the case of the employment and service group. The employment managers of Rochester, banded together as they are under the auspices of this council, which is sponsored by the Chamber of Commerce, are welded together very, very firmly, particularly in view of the prestige back of it. The employment managers of the city are arranging for a number of policies which will be the standard hereafter. We are collaborating on labor turnover. We have adopted a standard formula for combating labor turnover so that when we make comparisons we will be talking in the same language.

We are endeavoring to launch a campaign in favor of shop classification specification. That subject was brought up yesterday and I think is of very serious import in connection with the allocation of labor. If the industries of any locality can be influenced each and every one to analyze their jobs so that every industry will know what jobs in other industries are comparable with theirs, there is made possible this transfer from one plant to the other, which could not be possible otherwise on an efficient basis. So we are getting all the industries of Rochester to realize that it is just as important to know the requirements of their jobs as it is to know the physical characteristics of the men and women who may be the incumbents of those jobs.

We are also endeavoring to influence every one to make a systematic study of absenteeism and tardiness, and the loss of time due to these twin evils. It is a fact that in very few places is this study very comprehensive. We are trying to arrive at a standard method of combatting both absenteeism and tardiness and whereby there will be a systematic follow-up of every case of absenteeism and tardiness.

In these ways and other ways we feel that we are endeavoring to secure the maximum efficiency of the workers who are left behind, because after all absenteeism and tardiness is only a form of labor turnover, and it is not only important that we keep the men on the job, but that while they are on the job they are working continuously.

As I said before, I am very glad to be here at this conference and to extend to you the greetings from the East, from the Industrial Management Council and to tell you all how much we have appreciated the co-operation which has been extended to us, a comparatively new organization, by the two organizations which have furthered this conference. (Applause.)

MISS HOAGLAND: Mr. Chairman, I would like to ask the last speaker how they encourage the continuity of service. How they combat it. I would like to know some of the details of how they go about it.

MR. BOOTH: Mr. Chairman, one of the ways in which we are combatting absenteeism and tardiness is through a bonus plan. I might cite the experience of one plant which has worked this out at their factory. It offers a bonus plan of this nature. We thought at first that it would be very drastic, that it would not bring any result, but our fears evidently were not realized. Every employee who has a perfect record for three weeks is entitled to a five per cent. bonus for the fourth week, and continuously until such time as the record is broken. If the record is broken he has to pass through another probational period of three weeks before he is again entitled to a bonus.

This is a plan which we have with modifications in individual plants adopted as a standard. As I say, it is in the process of development, but we are working towards a standard and we find that method has been very efficient.

Another way in which we are combatting that evil without bonuses, and simply as a matter of detail, is to have the employment department interview everyone who has been tardy or absent. The very simple expedient of having the time-card of all who have been tardy or absent brought down to the employment department has been resorted to. When the tardy or absent man comes in he states his reasons for such tardiness or absence and they have a heart to heart talk with him. This, with the follow-up, we find has been very effective.

MR. FARNHAM: Do you allow any excuses whatsoever for absenteeism or tardiness?

MR. BOOTH: We have not arrived at a standard on that as yet, Mr. Farnham. Some plants do not. Others where the street car service is simply atrocious have made exceptions in individual instances. But those who do make exceptions do so only after the most careful investigation.

MR. FARNHAM: Do not they find that that encourages romancing on the part of the men?

MR. BOOTH: No; we feel it has just the opposite effect.

MR. FARNHAM: I mean, when you allow excuses, does not that put a premium on an excuse?

MR. BOOTH: I feel that it does. The Industrial Council is doing all it can to discourage any excuses of that nature and to make it simply a flat proposition of a perfect attendance.

MR. FISHER: Perhaps another bonus idea would be helpful to the gentleman who asked the question. In my company we have no time-clocks, and as continuity of service there is of the highest importance, and if half the men are sick we keep the machines going just the same. The constant attendance is of such great importance to us that we are using a bonus system which we work out and which has been operating very successfully in the gas works for a year. It is made up on the basis of the saving in coal and oil, based entirely on the figures of the accountant. A man is credited with ten cents per day for a perfect monthly record, so that a man who is on the job for a full month and who works Sundays is entitled to three dollars, provided he don't lose out in the

month. I believe they do make occasional exceptions at the discretion of the superintendent, but he is so severe in his follow-up that those exceptions are rare and the men feel that they cannot get away with any remissness.

THE CHAIRMAN: Mr. Fisher, you say you use no clocks?

MR. FISHER: We trust to the foreman. It is a case of personal contact on the part of the foremen with the men. We are scattered through thirteen plants, thirteen stations and substations throughout the city, together with our transportation distribution department, and it is impossible to work the time-clocks on that because there is so much emergency work, over-time, time and a half, and this and that, and we simply have to make reliability the main thing in our business. We must have men who can be trusted and relied upon to be there if they are well, or who will turn out in an emergency even if they are not well. Those men will mean a great deal more to us than the plodder who simply shows up at the stroke of the clock and quits at the stroke of the clock. It is inherent in our business.

MR. L. W. WALLACE (Indianapolis): I would like to ask Mr. Booth in regard to tardiness as applied in Rochester. Does that mean on time to the second every morning of the three week period, or does it mean some liberality one or two mornings, possibly a minute late. In other words, do you draw the line sharply on the second when you define tardiness?

MR. BOOTH: We define it, as you say, by drawing the line sharply. That is the only way to do, because if you once give a certain amount of leeway it tends to become more and more accentuated. To be exact is the only way to do it, in view of the fact that it is a bonus plan given gratuitously, and it is not that a certain amount is clipped off from his regular wages when he is tardy. The only way to do it is to have a clear line.

MR. WALLACE: As I understand it, he must have a perfect record for three weeks before he gets the bonus?

MR. BOOTH: Yes.

MR. WALLACE: Then if he is late one morning by a second, we will say, that deprives him of the bonus for another three weeks' period.

MR. BOOTH: Yes.

MR. WALLACE: Do you have any feeling on the part of the workmen that that is unfair and criticism and discontent because of that fact?

MR. BOOTH: No, I cannot say that we have. In fact, the concerns who have adopted the plan report a very great decrease in the amount of absence and tardiness, and the number who are participating in the bonus is increasing steadily each month.

MR. WALLACE: The reason I am asking this is that we have in our organization there an attendance bonus, which has been operating for a number of years. We give a flat rate of a dollar bonus per week for perfect attendance. That would mean then that if a person was on time five mornings of the week, and in spite of the very splendid

service of the Indianapolis street cars, happened to be late on the sixth morning, he would lose his dollar bonus. Our people became rather discontented with that. They seemed to think it was unfair, because they were there regularly five mornings of the week, and then maybe through weather conditions, or whatever it was, being late one or two minutes they had to lose that dollar. That discontent became rather pronounced, so much so that we felt it worth while to pay some attention to it. We did so by still offering the dollar a week for perfect attendance, but we would deduct only twenty-five cents for each morning's tardiness. In other words, they would have a chance four mornings of the week to earn an attendance bonus of twenty-five cents for that day.

Here is another significant point. Say that instead of that person being late on the sixth morning of the week he was late on the first morning of the week; then for the other five days of that week he would have no incentive to be present on time.

We have in our employ a man who, up to the time this attendance bonus was started, was never on time; since this bonus was in operation, about three years now, he has never been late.

MR. G. L. AVERY (Peoria): Mr. Booth made one of the alternatives the co-operation of the employment department as a means of cutting down of tardiness and absenteeism. For six years—it will be six years Monday—we have been conducting a physical examination and keeping a record of each man in the department. In our employment department the doctors are there at 6:30 in the morning to take care of injuries. As long as we have had the department, each man who has been absent, whether it is for a half hour or even with an excuse or permit from the foreman, must come into the department and have that slip signed by the doctor before he can return to work. We find that in the summer time and in various seasons of the year a man likes to get off a little early and go home and work in the garden, and he works around and gets caught with a nail or piece of glass, and he would otherwise slip back into the plant without having that noticed. In many such cases we find that where a man is taken care of before he goes back to work it keeps him more steady. He simply cannot come in and face the doctor with a story about having taken a little rhubarb and his stomach being out of order, or that he had an uncle or somebody who was sick, because he knows that the doctor can read the marks on his face. We find it is very effective to have a little slip signed by the doctor before a man who has been away can return to work.

THE CHAIRMAN: Does not this put a large burden on your medical department?

MR. AVERY: Well, we get used to that. We have, as I say, a thousand and one varieties of things to look after, such as calling on the people at home and seeing the men in the hospital and all that. But that connection is one of the means of getting in closer touch with the men. You can put your hand on his shoulder, you rub up against him, and that physical contact is a good thing.

We have been importing some men from out of town, Lithuanians

and Poles and Russians. One of those men started in to work outside, and worked until Saturday. He went down town Saturday night and was hurt by a motor. He was carried home and the policeman said there was nothing the matter with him. He lay there all day Sunday and Monday with nothing to eat and word came to us the next morning. So I asked the doctor to stop on his way to see him. He telephoned up and told the condition he found him in. We called an ambulance and took him to the hospital and the man was just out the day before yesterday. He had a broken leg, badly bruised and black and blue hips, and shoulder in bad shape and his hand.

In talking with this Pole the best I could—you soon learn to make signs that they will understand, and to let on that you know what they say—I found that this man instead of being an ordinary laborer was a draftsman and pattern maker and had several years' experience as a machinist. It is in those situations that we get next to a variety of things that these men are capable of doing.

Out of one hundred and fifty there are something like ninety-seven of them still at work, and quite a number of them have gone from the floor as gangway helpers right on to the benches, on to machine work in the foundry, and make seven or eight dollars a day. We have some fellows that are running electric cranes, in the stock room. Through this employment department and this physical examination we can get in closer touch with the men. The physical examination to me is the real answer to this mechanical aid. We must keep the human machine in order if we want to continue his years of productivity and we must learn to handle the men and get in close touch with them to get the full efficiency, as the supply of labor is short.

MR. WILLIAMS (Cleveland): If not out of place here I should like to ask what are some of the ways that the men have of getting the ideas of the workers on these various plans. I can see how the Chamber of Commerce people get together and plan certain things out, but I would like to know what are some of the ways in which the workers themselves are consulted. Do you have foremen's clubs and things of that sort to talk over the working-out in advance of these various plans, so as to side-step in advance the discontent that is likely to come if something is put over and is simply the result of the management's thought without much consultation of the workers?

MR. BOOTH: Mr. Chairman, speaking for the Industrial Management Council of the Rochester Chamber of Commerce, it is absolutely impossible for the Council to impose any of its ideas upon the workmen without taking them into confidence first, and asking for their opinions.

THE CHAIRMAN: How do you do it in an individual plant; do you call on the foremen or on the individuals, or is there a representative system?

MR. BOOTH: Of course, methods vary in the various plants. There is nothing standard in it at all. It has been done in mass meetings of the entire working force, either at the Union or some other place, or the club. The foremen, of course, get the individual opinions of the workmen.

THE CHAIRMAN: Yesterday we had quite a discussion on clothing for women in industry, and one of the companies manufacturing this kind of equipment wishes to exhibit some of their uniforms.

MR. DENT: We had a number of requests yesterday after the round table discussion to have one of these uniforms over here, so Sweet Orr & Company sent over a regular demonstrator from the factory.

THE CHAIRMAN: I suggest that we make general observations of the uniform and have the men discuss the various features of it after the exhibit.

MR. H. W. DAUGHERTY (Sweet, Orr & Company): Ladies and gentlemen, we are manufacturers of this garment, and we find that that is the most convenient for factory use. A great many superintendents are in favor of it on account of the safety feature of it. A large number of factories have adopted the garment, especially where they have machinery. It is not as apt to catch in the machinery as skirts, it is more swift to move in. Nordike & Marmon, the Link Belt Company, and many factories all over the country who have seen the garment, have adopted it. Some factories have a thousand girls in it.

The girls after wearing the garment, think it is more comfortable to get around in, where they are working on punch presses, or where they have foot-levers they are more comfortable. Especially in the canning factories they have a lot of power presses where they have to use foot-levers, and the girls working in these garments say they are more comfortable and that they feel better after a day's work than when wearing skirts.

The garment is neat-looking, easy to walk around in. The back is close fitting. It is sold according to the bust measurement. The only measurement you need to use in ordering is the bust measurement.

It is made in two styles. We have another one that is made with a bib, something in the order of the men's overalls, but with that the girls have to wear their own waists. This garment is much more desirable simply because the girls can change their entire outfit and have fresh clothes to go home in. They can come down in their nice clothes and wear this during the day.

MISS HOAGLAND: Do you make the same thing with a skirt?

MR. DAUGHERTY: No, that is the only garment we make. We have experimented for a number of years with several designs, and we finally adopted the present one and had the cut patented, so we only make this one. As we have a patent on it, of course, we would not change it on that account.

MR. L. E. BITTORF: It may be a little out of order, but I would like to ask how, in Rochester, the different companies get this uniform basis for paying bonuses. It seems in some concerns in Chicago like Ryersons, for instance, they have a continuous step up; they don't have any definite place such as Knoepfel suggests where they make a special inducement. As Knoepfel suggests, when they get up to one hundred per cent they add five per cent, and in Ryersons, I notice, they don't seem to offer that inducement to get up to the high marks. No one that I talked to seems to have a method of adding to the day rates. I would like to hear from

some of the people from Rochester as to their experience in the best method of getting the results from the bonuses.

MR. FISHER: We do not operate small individual machines. It is a case of large electric generators, from six to sixteen thousand kilowatt machines. There the efficiency comes in the saving of coal, and you know it is an exceedingly hard task to figure bonuses, because what one man does dovetails into what another man does. We set a standard five per cent low as the normal standard, and anything saved above that was split up in certain definite proportions to each class of men whose work had a bearing on the output. It is very complicated, and so far as I know the system is unique.

So far as the general bonus plan has worked out in Rochester, I will have to put it up to Mr. Booth as to how that is handled.

MR. BOOTH: Mr. Chairman, I did not mean to convey the impression that every plant in Rochester had a bonus system, or that those who had bonus systems had plans that were absolutely identical. I simply tried to convey the idea that there were plants that had adopted bonus plans, and using the experience that they had as a basis we are trying to spread the idea among the other plants, and the plan which I cite is simply characteristic of one plant, and has been copied by other plants with adaptations and modifications to suit their individual industries.

I know one plant that maintains a similar bonus, only with a two week proviso. After a person has been there two weeks he or she will be entitled to a bonus. I know another plant which gives it after one week. There has been nothing standard as far as that is concerned, as to the length of time, but the idea of having bonus plans for punctuality and for continuous attendance, we are trying to make as standard as possible.

In this connection, this careful checking-up and following up of absenteeism has been responsible in a great many cases for heading-off incipient sickness. A person will be absent maybe in the forenoon or afternoon, and practically no attention will be paid to it, and maybe no thought will be taken of the matter until the persons has been absent three or four days. But in plants where there is a visiting nurse to send out as soon as they find a person is absent, sometimes they find that possibly a person is coming down with a sickness which if permitted to develop would necessitate absence from the plant for a considerable period, but with the good offices of the nurse brought to bear at that particular time the man or woman is put on his feet again and probably back to work in a short time, and therefore the efficiency of the individual is improved and the time is not lost to the company by reason of extended absence as in the case of sickness.

MISS HOAGLAND: May I say a word in regard to the nursing proposition? In the first aid department the services of the nurse have reduced the number of absences. I am sorry that I have not the exact figures here, but there is a considerable reduction, and it has militated in favor of production, because before we had the visiting nurse's services or before we had the first aid department the girl was obliged to go home for slight illnesses, whereas a visit to the sick room for half an hour enables her to

go back to her work; and it gives her a greater wage and also makes for greater production.

We do not find it practical to send our managing nurse who is needed at all times in the factory, for that home visiting, but we do have a number of associate welfare workers who do some of that, or we have used to a great extent the Visiting Nurses' Association of Indianapolis, or the Public Health Nurses' Association for those follow-up visits. Those are charged to us on a monthly account at fifty cents a visit, and the result is often of great interest to us. It may mean that the person who has been visited has left our employ and gone to another factory to work. If so, we are at once put in touch with that situation. It may mean a return to work the next morning, if they think we are interested enough to send a nurse to see them. It also means that many a lonely man or lonely woman has been cheered in an illness in a desolate boarding-house.

MR. J. T. B. RHEINFELDT (Packard Motor Car Company) : Just a word in regard to "Men Remaining—Securing Their Maximum Production." In the early part of the round table talk a gentleman spoke of utilizing the negro labor. At the Packard Motor Car Company about a year and a half ago we found that on account of the foreign labor leaving Detroit and going to other cities that we had to use negro labor in the heat treating department, and as truckers, janitors, laborers and messengers, and it has worked out very satisfactorily.

Also since the war began we have been utilizing women in operating light milling machines, drill presses, as inspectors to handle small parts, automatic machinery, tool-grips, as factory clerks, trimming and electrical parts.

The question came up, how do men take the women working side by side with them. Well, in our plant where we have placed the women in the small machine departments we take the men and have them act as instructors, giving intensive instruction to the women, and thereby eliminating the factor of the men becoming disrespectful to the women, and making a closer connection between the two sexes. We have found where we have put in women help that the morale of the department has improved and we have a higher efficiency than before.

Another phase of the men in manufacture. I have not heard mentioned during the whole conference the utilizing of soldiers who have been drafted that cannot be used in the war. For instances, in our tool department where we have to have skilled labor and where a great many of our men have been taken by the draft—it requires a great deal of skill to produce and make tools and fixtures—it was necessary for us to secure from the government, on government work, making Liberty Motors, soldiers' help from the cantonments in Michigan. We have at the present time quite a few of the soldiers who are working upon the jigs and fixtures, both designing and making, of the Liberty Motor parts. Also the Navy Department has sent from the Great Lakes Training Station several classes of sailors, ensigns, chief engineers, master mechanics, to our plant to become familiar with the Liberty Motor before the government uses it in regular operations. So we have used quite a few of our men instructing these soldiers in the work of our plant, and also the women.

A gentleman asked, how do you consult your foreman as to your new policy; do you do it? We find it not advisable to consult foremen on new policies.

Suppose we want to put in a small part department for women. We do not consult the foremen about it, but we do take into our confidence the managers and superintendents of the various divisions who have charge of the foremen and assistant foremen, who in turn have charge of the job setters and machine bosses, and we find it is a better way for the superintendent to talk to his foremen and ascertain how they feel towards a probable change in the policy. In that way we find from each man his personal opinion, for or against, and then take him aside and try to either convince him or let him alone until by practice in other departments he proves that his opinion is wrong.

In one department we had a foreman who felt that the woman help was misplaced, but at the same time his requisitions for labor had been going into the employment department and he was not securing the proper satisfaction from that end. We could not supply him with men; he therefore watched another department that had women help, and he saw immediately how he could with the same kind supply his needs, and he set about immediately to do it.

We don't believe in exploiting women. Most of the manufacturers have a tendency to think you are exploiting women, but in our section of the country we find factory help is very scarce and we cannot get it. It is not because we do not want it. What male help we can get is foreign, and as compared with foreign help we find that the women are far better and more satisfactory than the foreign labor. They get far better results, you can talk to them and they can understand you and you can understand them, so it is far better in every respect to have women than foreign labor.

MR. FISHER: As a safety engineer, but without making any comment whatever on the uniform in question, I want to make the point that on drill presses and some other types of work it is absolutely necessary that the women wear a cap. I don't want to let that get away, because they are very apt in certain instances to have the hair wound up in the machinery.

MISS MORNA HIGGINS (United States Department of Labor): I have charge of a woman's division of the United States employment service at Indianapolis. It is my business to find out what the employment managers want and what the different manufacturers want. I am very much interested in everything that relates to the welfare of women in a factory. I am very much in favor of the uniform, and agree with Mr. Fisher that the cap is just as necessary as any other part of the uniform.

There is one thing that I want to suggest to the men in the different industries where you have a large office force. To my mind there is no argument about the necessity of a uniform of this kind for the girl who operates the machine. It is far simpler, it is more economical from the standpoint of wear and tear on materials. There are women and girls of the factory type especially who need some guidance regarding clothes.

I went into one factory in Indianapolis where they had employed from twenty to thirty girls in the office, though their work had never before re-

quired women in the plant. I think five or six on assembly work was all they ever used. Now they are putting on one hundred girls in ammunition manufacture. They have built a new building for it. I find that that company is very progressive from the standpoint of the girls they are putting in the factory. In conversation with the president I said, "I think you ought to put your girls, your office girls, into uniform."

Let me make myself plain about that. By uniform I do not mean necessarily overalls. A department store requires that girls must wear certain regulation garments. As I sat in the office waiting about twenty minutes I observed those girls' blouses. I don't think I saw a blouse that cost less than \$7.50. Some of those blouses were not appropriate for girls to use in business at all. You have all seen them; there is no use in describing them, but they are not appropriate at all for office wear. If you can require department stores and girls in factories to wear a uniform, your office girls could have perhaps different colors, but some sort of a dress so that the girls will be dressed with some sort of reasonableness. This man said, "We can't do it, we are too far out, the girls won't come here." In conversation he told me that in the last month he had discharged three girls because of their dress and the way they looked. I asked him if he told them why they were discharged and he said, no, he had not, and I said he was sidestepping a point.

Those girls probably went right back to me, dressed with their suit, skirt and coat, and I did not see the blouse.

I am very much interested in the question of uniform. There are some places where you can use the skirt, but I saw one machine where the girls were working from the back forward; the men were working on the opposite end, and the girls facing the men; there was a bench where the girl had to lift her foot eighteen inches from the floor to operate that machine. Those girls were operating in these aprons, that factory used an apron which was rather natty, but those girls complained to me about wearing skirts.

THE CHAIRMAN: May I make a suggestion to the audience? A topic was touched upon slightly today which was also brought out last evening by Mr. Muther from the Gisholt Machine Company, of Madison, Wisconsin. That is, as the training of operators, the training of labor, in case it is necessary to build up an organization quickly. I might ask for volunteers along that line.

MR. RHEINFELDT: In 1914 the Packard Motor Car Company started a shop set aside from production whereby they could take new men and put them on machinery and put an instructor over them and give them intensive education, as we call it. That is for producers in the factory. That is men whom we expect later on to produce our parts.

Then it came along to the trim shop. We had taken over the Krit Automobile Company, and we had that building on our hands, and we utilized the Krit buildings for the restaurant and also as a school of instruction for new employes. When they come into the plant or into the school we teach them how to use a micrometer, about calipers, gauges and other tools, for instance, the various kinds of wrenches, monkeywrenches, and when a certain wrench should be used, and as to various other tools

that they are very apt to come in contact with in the department, gauges, tools and fixtures. We teach them first the name and then their uses, and then we teach them the various routine of machines, and the manual of the machine, and then production, how to apply tools to production. We find that a man can learn more in three weeks in the school than he would learn in the department or plant in three years, because you give him a man that has been through the mill, who knows the various methods that are applied by the average machinist; he knows their methods and he has been educating himself in the advanced methods that we have been trying to teach to all our employees from an efficiency standpoint.

Recently an opportunity has been given to the manufacturing department to go into this far more extensively, and at the same time to do the same for women as well as the men coming into our plant, setting aside a whole building of four floors for this work only. They also teach apprentices, boys eighteen years old, and give them a two or three months' course, and a post graduate course. What I mean by that is, for instance, a boy comes out of college and has taken up engineering, say the different branches of engineering, civil, mechanical and electrical, but he has not had very much shop experience. We start him through what we call the post graduate course in the plant, giving him so many weeks on different types of machines, also as a job setter, then as assistant foreman and a foreman, and if he shows ability as a superintendent we will raise him right up through the ranks. That is what we call a post graduate course for apprentices.

All of this work we classify under intensive education, and it is our policy to go into this more and more as much as we possibly can from now on.

MR. WALLACE: May I ask the last speaker a question or two? You said that in three weeks there they could learn more than they could in the factory in three years. May I ask if that is the learning period, actually the learning period?

MR. RHEINFELDT: It varies with the individual.

MR. WALLACE: What is approximately the learning period you teach them there?

MR. RHEINFELDT: About eight weeks.

MR. WALLACE: It occurs to me it is not very intensive, two months of it.

May I ask another question. From where do you get your instructors that do this teaching?

MR. RHEINFELDT: From our various departments. We have in our whole plant twelve thousand employes. We cover sixty acres of floor space.

MR. WALLACE: How do you select your instructors?

MR. RHEINFELDT: First, from recommendations from the foreman of the department, then the chief of the school interviews those recommended, gets a record of their experience and tabulates it on a card, how long he has been with the plant, what machines he has operated, and also they give him an examination.

MR. WALLACE: May I ask again, do you attempt to get a man

that is expert in his particular trade or branch of work as an instructor?

MR. RHEINFELDT: We preferably get a man who is an all-round man in machine work. But take automatic machinery, it would be better to get an expert on automatics to teach automatic work. When you take general manufacturing machinery like a drill press, milling machines and lathes, then I would like to get a man who has expert experience on all of them, which is very hard to get.

On motion the meeting adjourned.

SEVENTH SESSION.

Friday Afternoon, March 29, 1918.

"AFTER THE WAR—READJUSTMENTS TO TAKE CARE OF THOSE RETURNING, INCLUDING DISABLED."

Mr. L. W. Wallace, of the Diamond Chain Company, Indianapolis, chairman.

The meeting was called to order by the secretary, Mr. Dent, at 2:00 o'clock.

MR. DENT: Ladies and gentlemen, the program announces that Mr. J. F. Price of the Brown Hoisting Machinery Company of Cleveland, Ohio, as chairman of this meeting. We received a telegram from Mr. Price this morning stating that he is unavoidably detained in Cleveland. We have been fortunate in securing a very able chairman, a member of the Western Efficiency Society, who is well known to many present and who consented to act at the last minute. I take pleasure in turning the meeting over to Mr. L. W. Wallace, assistant manager of the Diamond Chain Co., Indianapolis.

THE CHAIRMAN: It has been a very beautiful custom to open our meetings by the singing of the first verse of America, and we shall follow that custom this afternoon.

(All joined in singing the first verse of America.)

THE CHAIRMAN: The general topic for consideration this afternoon is, "After the War—Readjustments to Take Care of Those Returning, Including Disabled." In recent months we have heard a good deal of preparing for war, and have taken care of present emergencies, and I think it is indeed worth while that we turn from the present demands and also think and plan for the readjustment of affairs that must come about after this war is ended. I feel, therefore, that the people who have had this program in charge have acted very wisely in setting aside this afternoon for this phase of the entire problem.

The first discussion will be, "Industrial Stimulation Through War Finance," by Mr. James A. Davis, chairman of the Speakers' Bureau of the War Savings Committee. I take pleasure in introducing to you Mr. James A. Davis.

MR. DAVIS: Mr. Chairman and members of the two societies: There is only one topic in every one's mind and on every one's tongue and in our souls today. It is that which is going on in France. Carnage holds high revel there. Terror and slaughter are advancing to the tune of the dead in the valley of the Somme. But the line holds. Men are being tortured in shell-holes, their faces to the sky; brave men's souls are going

unshriven to heaven. But the line holds. The German hordes are charging our men and our line with almost countless hosts, armed with weapons that a barbarian would scorn and a demon of hell blush for devising. But the line holds. The valley of the Somme is a scene of human shambles, a desert waste, a sea of devastated homes and desecrated shrines, but the line holds, and by the grace of God the brave men's blood that ran will continue to hold until victory comes. (Applause.)

There is nothing more stimulating than the thought that comes to us in picturing that desperate struggle; nothing so convinces us that the outcome of this crucible will be the refining of men's souls, and that at the end of this war we will see its great compensation in the class of citizenship developed over the world.

After all, there is a compensation for every ill. No disaster, whether of human or physical origin, but has been followed by its compensating advantages, and the greatest of these that will follow this war will be that the American people will think, and with heart and soul and energy such as they never have thought and figured with before, on the destiny of their country and their own relation to it. That is what we will get as our reward. That is what we will get for the blood of our brothers and our sons which will be spilled over there. That is what we will get for our sacrifice in money and blood.

We must realize this, that in spite of all theories, all conditions, all rumors as to the exhausting effect of this drive, bringing the war to an early end through collapse in Germany, have no weight in the consideration of this question. The end of the war is not in sight, nowhere near in sight, and that end will not come until we win the war. It is going to be the American treasure, it is going to be the American blood, that will turn the tide.

It was Louis XIV who said that victory would perch only on the banners of the nation who could produce the last Louis d'Or, and that is what concerns us. It is going to be men and money, but money more than men that will win this war.

When you study or reflect upon or analyze any of the great military struggles of the past you will discover that it was not man power entirely that brought victory to a nation. Man power is only one of the elements of the strength of a nation at war. Unless that man power is sustained by the wealth of the nation, no matter how great its man power, no matter how well led, that nation will be lost in the struggle.

There are two great forces of a nation at war, its armed force and its civilian force. For every man under arms six men are required to sustain him, and each one of those six men requires three to five to sustain him. That is the part of the great civilian force. That is part of the struggle. We of the civilian force who cannot go to the front but who want to do something in this war, it is for us to mobilize not only our hearts and souls but the wealth of the nation, through our concentration on that one purpose. And it is the duty of every man and every woman and every child to do their parts as members of this civilian army, to bring about the end that our coffers must be so well filled that our men will not lack for anything to hold them on that line, and that our allies must

be sustained there with all the courage that the knowledge of our being in the fight to help them will give them.

How is this money to be forthcoming and what effect is it going to have on our industrial affairs; what effect is it going to have as a far-reaching factor in our development as a people and as a nation? There are two means provided for supplying this wealth. First, the Liberty Bond, a bond which our nation offers us for our loan to it of money; not a gift, not a sequestration, not a commandeering, but a loan. It gives us the best security in the world, a bond secured by not only the wealth of the nation, but the devotion, the loyalty of its people, their honor, their love of home and their veneration for their traditions. That bond is secured by a wealth approximated today at two hundred and seventy-five billion dollars. The income of the nation is forty billion dollars. Can you conceive of a better bond issued by any nation in the world, or any as good? That bond is not only our best security but it is the premier security of the world, and it will lose none of its eminence through our experience in war. But it will be glorified by what it has done in the war and what you have enabled it to do.

Today our nation has issued up to this time nine billion one hundred million of securities for our maintenance in war. Of that amount five billion has been loaned to our allies, therefore, that is an asset. The four billion is nothing more nor less than our preparation for war. When you realize that our national increment per annum to our wealth is twenty billion dollars, that we may supply that to our maintenance and support of the war, we can carry on this war for ten years at the rate of twenty billion dollars per annum and end just as wealthy as we are today. From our income, if we save but twenty-five per cent, we will add another ten billion for good measure, which will keep us in the war for ten years longer, if necessary. That is our financial strength.

The government provides another method, a far-reaching method for its supply of money, and by no means competitive with or conflicting in any way with the sale of Liberty Bonds, and that is through the simple process of buying a stamp at the postoffice, bank or from a qualified distributor. They propose to raise through the sale of thrift stamps and war savings stamps two billion dollars, a minimum sale being twenty-five cents, a maximum one thousand dollars. No purchaser of a thousand dollars is encouraged to nor permitted to buy the thousand dollars worth with one payment. It must be an accumulation. This means of raising money is for the purpose of developing thrift. Thrift is something we have never been taught by text-books or necessity in this country.

My particular knowledge of thrift came with the first lesson in economics taught me in Germany. Thrift is nothing more nor less than a simple rule for the avoidance of waste in any form, something that you gentlemen are all keyed up to and endeavoring to accomplish by any means in your power and by your skill. Thrift is that which leads us to differentiate between two things, and to determine values. Thrift is reason's curb on extravagance, loss of power. It is what stimulates us to convert all our unused earning power into production. It leads us to buy only that which we need and to buy no more of anything that we need than we

can make profitable use of. It is that curb on us which leads us to think before making an expenditure, and not to spend because we have the money to spend. It is the very refinement of efficiency, and by the way, we quote German efficiency when the German does not know anything of the kind. He never speaks of efficiency, there is no synonym in the German language for our efficiency at all. It is nothing more nor less than thrift in his endeavor to avoid waste.

Thrift then is that which leads us into that consideration of a purchase that if we have two articles offered us that we need, one for a dollar and another for a dollar and a half, the one for a dollar being just as well suited to our purposes and meeting all our requirements as thoroughly as the one for a dollar and a half, but perhaps not so well finished, and maybe not so much in the fashion, it is thrift which dictates to us to buy the one for a dollar. That is a conversion then of thoughtfulness and character, into profit. It means that we have earned through thrift fifty cents. And that is what we are expected to invest in thrift stamps, whether it be fifty cents, a dollar, five, ten, fifty, one hundred or a thousand dollars. That is what that stamp is created for. It is educational. It is developing.

It is thrift that has made the Frenchman the marvel of the world for financial acumen and recuperative power, at the same time it has been the means of his developing into a model of sublimated courage and patriotism, the valorous, glorious, brave Frenchman who is holding that terrible horde at bay today. (Applause.)

Now, the purchase of thrift stamps asks of us all a devotion to thrift, frugality, thoughtfulness, energy, a use of unearned power, and that liberation in all our financial affairs that leaves at the end of it a result in savings. Thrift is nothing more nor less than a profitable occupation for the sake of accumulation. You can see how the practice of that would keep us in close personal relation with the struggle and our duty to support it, and would enable us in every act of our life almost to be doing something in a direct, tangible way, not only in the accumulation of money for that purpose, but in elevating ourselves to an appreciation of our birth-right as American citizens and our usefulness to the world hereafter and as examples of thoughtfulness and care in administration of all our endeavors in life. It is therefore a continuous personal service which must be just as unremittingly given, as generously offered, as that service our boys have sworn to give at the front and are giving. (Applause.)

That is the keynote of the subject that has been given me to talk on. We know that this education that we are receiving through the demands of the government on us for production at as low cost as possible of all the necessities of war is going to develop every one of us into a higher grade producer. The minerals that we are developing of a commercial value are astounding. We have never known of our possibilities in a chemical line. Today there is before me as a study a production of nitrate which if it will be confirmed by a commercial enterprise now being undertaken in Canada, will revolutionize not only agriculture but our position in this war.

If you realize that Germany's whole line of education has been directed

toward the power by each particular unit in the way of an individual as he would fit in the war you will see what has led to her commercial supremacy in many of the valuable commercial products. It was war, his effectiveness in war, his education for his position in war, that made him a great producing machine, each man fitting in as a part of a great big carefully, well-designed machine. War then had its effectiveness not only in the field of battle but in the development of the nation through a concentration on the training of that individual as a producer.

That is where our training has been lacking. We have had rather a case of super-individualism. And adjustment between those two is what war is going to accomplish in this country. And war financing as it is being undertaken in this country is going to be a stimulant to it of inexpressible value.

We of middle age may not live to see it, but I believe we will. Our children will live to see the United States take pre-eminence over the world, not only for her concentration upon the full development of all her powers, but in her ability to hold and control the world not only commercially but as the great arbiter of peace. She will have the power not only of money, of skill, of development, of resources, but that great individual force of every American citizen when he realizes what he or she is here for; that we are not living for ourselves alone, but living for each other and for the world. That is the substance of the story. To go into all the details of the various means of stimulation that have come before me would keep you here for hours. But that is the thought we want you charged with. Save, save in every way. Convert the unused into usefulness. Convert your idle time into profitable occupation. Never let an opportunity pass to see some result financially of everything you do. And lend that money to your country in this struggle, the holiest, most righteously inspired for which a nation ever went to war.

Our enemy has called us a nation of wasters. Let us prove them liars, and that we are not only the richest nation in the world but the thriftiest, the most united, and the most thoughtful, and that we will be extravagant and very extravagant only in the means that we provide for defeating them. I thank you. (Applause.)

THE CHAIRMAN: I was sitting in the smoking room of a parlor car coming to Chicago from St. Louis yesterday afternoon. A gentleman walked in that had on the lapel of his coat a service button with a star in the center, and as he took his seat another gentleman sitting in the smoking room said to him, "I see that you have a son in the service." The man said, "Yes, he is in service." The other man said, "I had a son too, that was in service, and I am bringing his body back from San Antonio for burial." That father and that son had made a supreme sacrifice. It is not the privilege of every one of us to go personally into service. It is not the privilege of every one of us to have a son to send to the front. But it is the privilege and it is a patriotic duty for every one of us to send into this conflict all that we can of personal effort and of financial help, and I am sure, Mr. Davis, that this organization and its friends stand for thrift and stand to do all of those things that will conserve energy and material and finance, that we may see this thing end in victory to us.

It was my pleasure to be in Providence, Rhode Island, in 1914, associated with now Major Frank Gilbreth. We were discussing the war and its possibilities, and he offered the suggestion that there was good work to be done in making injured and crippled soldiers useful men after this war is over. That thought appealed to me, and I have watched with a great deal of interest and have assisted somewhat in doing a little bit towards the re-education and remaking, as it were, of crippled soldiers, and I am sure that there is no one issue before us today of more moment than that of bringing back to usefulness those men who are being crippled at the battle front.

I take great pleasure introducing that subject this afternoon, "Re-education of Crippled and Disabled Men," by Mr. Douglas C. McMurtrie, director of the Red Cross Institute, New York City.

MR. McMURTRIE: Mr. Chairman, ladies and gentlemen: We cannot be very proud of the way we have treated the crippled soldier in the past, or for that matter in the way in which we have treated the crippled industrial worker. In past wars the best a soldier who gave his energies and his limbs in the defense of his country could hope for on his return was a pension, which was never large enough to really support him if he was disabled, and was just about large enough to induce him to idleness or to make him semi-dependent on relatives or friends. The pension system also has been one of very reprehensible history in the manner in which it has been made a subject of congressional favoritism and patronage and in every way it has only been an effort which has certainly failed to compensate men who have given their best abilities.

We may have been able in the past to afford this policy. We may have been able to take the pick of the country and disable them and amputate their limbs and support them as vagrants, possibly, for the rest of their lives. That is, except in the rare cases where the men's individual character and initiative carry them over these obstacles. But we can certainly afford that no longer, and that is being clearly realized in Europe today, and is also being realized in this country as we are making plans to take care in a constructive way of our crippled and disabled soldiers.

The same thing I will say applies also to our crippled industrial workers. We now have reached what many of us now consider an advanced stage in compensation legislation, so that no man who is injured in industry now need be left entirely poverty stricken, but the compensation system too often only encourages a man to live on his compensation as long as it lasts and not to get back again into industrial endeavor. In fact, if he wanted to get back into useful endeavor it would be almost impossible for him to do it because there have been no facilities available to help him get the special training by special devices, or assistance that would enable him to become useful again.

The first move to change this inadequate condition was taken about twelve years ago in Belgium, where the state, being responsible for compensation payments, was interested in minimizing them, and was interested in taking the victims of work accidents and putting them back on a useful basis. They started in Charleroi, a school for this purpose, and that school was successful. There was also started six months before the

war another school in Belgium, and there had been started two or three similar schools in Paris. The aim of these schools is extremely logical. They take a man who has been injured so he can't return to his former occupation. A lot of the men who return disabled do not need rehabilitatory education. They can adjust themselves. But the man who cannot go back to the occupation he has followed before must be given some sort of training for a trade that he can follow. If he has required the use of two arms in his former trade he must be found a specialized occupation in which one arm will suffice. If he has been in a very active line where he needs both his legs and one of his legs is cut off we must find for him a more sedentary occupation which requires skill, but where he can deliver one hundred per cent of product in the line picked out for him.

The belligerent countries have all seen this matter very clearly. Three months after the war began the mayor of the city of Lyons in France realized the waste involved in allowing to sit around the streets sunning themselves perfectly strong, healthy men who had lost a leg or an arm, at the same time when the factories of the city were crying out loud for every bit of labor they could get because of the number of men who had been called away to the front. He found it hard to reconcile these two sets of circumstances, and set about to remedy it. He tried to get these men jobs, but could not because they were men who had been shut off from going back to their former life. He found in order to get them jobs he would have to train them for something they could do, and he found in the city at that time the superintendent of this first Belgian institution which had been swept away in the first week of the German advance. That man was in Lyons, and these two men got together and founded the first training school in France, called Ecole Joffre, which has already served as the inspiration for hundreds of other similar schools which have been since founded throughout France.

The work spread. It has been economical. It has been humane. It has put the man back as a happy citizen, because he is a useful one. We are now planning work of a similar character in the United States. As soon as we entered the war our attention began to be directed to the matter, and it was naturally realized that we must do not only as good a job as had been done abroad, but a better job, if we were to hold up our end. The office of the Surgeon-General of the United States is taking up the matter of reconstruction hospitals, where every effort will be made by surgeons of ability to bring the men out to their best physical capacity. After he has reached his best physical state as far as the surgeon can repair him he may then be permanently disabled. He may have an arm gone, a leg gone, some muscles missing or some other infirmity. And that man must be economically rehabilitated after he has been physically rehabilitated. To do that vocational schools have been started, and they have been working in Washington on plans for that work. There is no doubt, however, that United States will accept nationally that responsibility and carry it out.

One particular item, however, I want especially to bring to your attention, and that is the matter of the public attitude toward the cripple. We can provide training schools, we can provide employment facilities, but

if we do not get a helpful reaction from the public a lot of the work will go for naught. The reason why so many cripples are helpless and dependent today is because the public has helped to make them so. The moment a man was injured everybody assumed that he was going to be helpless, that he was a pitiful object, that they should give him all the sympathy possible but give him nothing else; that there was no possibility of that man holding a useful job. That is not so. I can show you hundreds and hundreds of formerly disabled men who have made a science of life, and who have done so rather in spite of the public hindrance rather than by the public help. To alter that attitude of ours is something that we must try to do in every possible way. We must make our influence a real help. We must not pauperize the men, we must encourage them to believe that they must continue doing their duty, and by making those demands of them we will be doing the best service.

My own interest in this work has been of rather long standing, because I have been interested in cripples for a good many years before we got interested in the subject in such a national way. The American Red Cross early in the war had brought up to it a proposition to start training schools for crippled men. It was not desired to interfere in any way with the national program, and what was finally decided was that we must start one training school that would cover some of the preliminary field, that we would study the difficulties that we would run up against here in America, that we would do some work, make some mistakes, and at least have, when the time came, a contribution of some experience to make if nothing more. The result was that there was established in New York the Red Cross Institute for Crippled and Disabled Men, which is actually under way training industrial cripples at present, because we felt the only way to learn how to deal with cripples is to start to deal with them. For that reason the institute is now in operation, and it has many activities of a broader scope than the conduct of the school alone.

(Mr. McMurtrie showed pictures of the work in training the cripples in France.)

THE CHAIRMAN: The next paper is, "Business After the War," by Mr. Willard E. Hotchkiss, director of business education, University of Minnesota. I take pleasure in introducing to you Mr. Hotchkiss.

MR. HOTCHKISS: When I came in here, Mr. Chairman, ladies and gentlemen, and looked at the headlines along the street, it seemed to me that it was going to be a good deal of a tax on your mental attitude and mine to address ourselves to this particular topic. After listening to the addresses and witnessing the wonderful work that is being done in the way of rehabilitation, it seems as though if we do address ourselves to business after the war perhaps we ought to concern ourselves with something that is pretty tangible and concrete. I feel, therefore, somewhat apologetic, especially at this hour of the day, for attempting to take up what are perhaps some of the more general, and I might almost say philosophical questions connected with our adjustments after the war.

Mr. Dent is responsible for my having dictated four or five pages of manuscript which I intended to send to Mr. Dent, and throw in the wastebasket. But I believe that in order that I may say one or two of the things

that I intended to say, and get over the introduction in order to say one or two other things that I wanted to say which are not in the manuscript, that I will read rather briefly from the manuscript. I realize that I am taking a very serious risk after the entertainment, for in spite of the seriousness of the things we have seen it is in some measure entertaining as well as educational to witness the pictures which we have witnessed.

"BUSINESS AFTER THE WAR."

WILLARD E. HOTCHKISS.

I trust that what I shall have to say this afternoon will fit more closely both into the general topic of the conference and the topic of this session than the subject of the talk might indicate.

The industrial engineer approaches business problems both as a student and as a practical administrator. As a student he analyzes, groups his material, and applies certain fundamental principles to the data which he analyzes. His analysis also leads him to the discovery of new principles, and when the analysis is finished he brings together the analyzed data and the principles, new and old, into a working plan for solving a business problem, in such a way as to increase the effectiveness of energy expended. More and more business research and business administration are being merged into a single problem, but it is still possible in a measure to separate the two viewpoints, especially if we think of business in a nationwide sense.

Considering my occupation, it is perhaps unnecessary to explain that I shall try to get at the subject this afternoon from the standpoint of the student of business. From that standpoint it appears to me indicative of the time in which we are living, that a group of industrial engineers should meet together for three days to discuss the vital questions of human relationship in business. The conclusions to which students of business are rapidly arriving, and which further study only tends to confirm are such as to make the question of human relationships and especially the relationship of employer to employee the dominant one to consider in connection with the subject "business after the war."

Prior to about ten years ago efforts of American universities to establish business as a professional study were concerned almost entirely with a mass of descriptive information covering a number of separate business fields. Specialization meant concentrated attention to the facts in one of these fields, and in the last years of the business course the student continued his specialization through further drill in the more detailed facts of a narrow field.

The viewpoint which has been developing during the last decade makes it the object of professional business study to develop the power of applying fundamental principles to the analysis of business data. From this standpoint it is the task of such study not to drill but to educate. Emphasis is shifted from information to principles and facts become means to an end rather than an end in themselves.

This shift of emphasis from facts for their own sake to facts as gate-

ways to principles has had three important reactions upon business research. First—to use the contrast which has been so well brought out by my friends, the Gilbreths, it has made likeness instead of difference, the starting point for business analysis. Second—Through the featuring of likeness it has led to a “functional” as distinguished from a “departmental” or “line of business” organization of business data. Third—Intensive study of the different functions common to all business has revealed in all of them problems of human relationship which overshadow the problems of technical organization.

Likeness, functional analysis and human relations are the ideas which now command emphasis. It would, of course, be superfluous in this presence to enlarge upon the application of these fundamental ideas, but if the emphasis here suggested is correct, it is possible to apply certain broad general principles to a subject like business after the war, and this, in spite also of the uncertainties which obviously the future holds, in spite also of the varied ways in which forces will operate in different lines of business.

Of course when it is maintained that the clue to business problems after the war is to be sought in the field of human relations rather than in the field of technical organization, it must be recognized at once that profound changes are sure to occur on the technical side. The extent to which mass production is being carried at the present time, the way in which manufacturing and assembling of parts is being segregated in different concerns, the changes in transportation, including the vast equipment for the production of shipping, and the possibility of aerial transportation and communication—all of these things will tremendously affect the technical organization and will doubtless determine many of the lines in which business will develop.

Another sort of technical organization problems, of course, has to do with the effect upon future business of directing industries into war channels, but here, when we think of this in connection with the future, we are much closer to the human side of business, because we can only answer the question how far the curtailment or suspension of different lines of business will represent a permanent change, when we know to what extent they will change the habits of the consuming population; and this, of course, is distinctly a human question.

The growing emphasis upon the human side of things is shown very clearly in the way in which students of the different business subjects have been thinking of their own activities. Take accounting, which was the earliest of the business subjects in the field. Until recently the accountant has been primarily concerned with applying certain fundamental principles to the analysis of financial mechanism of business, but now the accountant is more and more paying attention to the policies under which the mechanism is operated, and these policies have primarily to do with the relations between human beings. As the scientific analysis of business has grown out into the field of human relationships accountants have been enlarging their viewpoints, and it is only through this broadening concept of the subject that accounting is holding its relative position as a field for business study and research.

In a similar way we are passing from mechanism to analysis of human factors in marketing and finance, and still more, of course, in the field of shop management. The attention being given, not only in such gatherings as this but in actual business practice, to such topics as industrial relations and employment management, is eloquent of the part which human relations plays in the work of the general executive. A year of war with European war experience in the background has made the human factor in business, and especially the employment factor, stand out so clearly as the key to future business policy that the question is hardly longer debatable.

When we come to consider the way in which the various human factors will align themselves and the effect which this alignment will have upon future business development, we are, of course, in a much more difficult realm, and one in which prophecy is extremely difficult. However, if present tendencies are to any extent indicative, there is one assertion which it seems comparatively safe to make, and that is that business policies are destined to be worked out with a very much larger participation of workers and of the general public than has been the case heretofore. By participation I do not here have primarily in mind participation in the products of industry or the profits, but rather participation in the actual determination, first of what constitutes efficient business management and operation, and second, how efficient management is to be secured.

A previous speaker in this conference, Mr. Simons, has addressed himself to the topic, "Scientific Management a Necessity to Modern Organization." Of course I do not hesitate for a moment to agree to the thesis employed in Mr. Simon's topic, but I should emphatically disagree to it if it were so defined as to limit the function of planning, (using the word planning in the broad sense of working out not only specific processes but policies as well), I should dissent if the term scientific management were to confine planning in this broad sense to the management. I do not believe that we are justified in using the term scientific in connection with any analysis of a business or other problem unless there is included within the analysis as nearly as may be all of the factors which affect the solution of the problem. It is well-known not only that the demand on the part of organized groups of workers for a larger participation is insistent, but what is more, research in the field of inductive psychology during the last few years has demonstrated that demand for wider participation rests upon the most fundamental instincts of the human mind.

Obviously no one can predict how far this demand for wider participation will go. For myself, I am one of those who believe in the broad general principles that action and reaction are equal. Aside from this it is clear that definite tangible forces will make for moderation. It is fairly clear also that when the war is over whatever the burden of debt, and whatever our poverty in other regards, we shall be supplied with an industrial equipment and with a force of laborers to operate that equipment which will far exceed the normal demands of peace time before the war. In addition to this it may be that the discipline in economy and in the wiser selection of consumption goods will have an appreciable influence

in diminishing the demand for certain kinds of luxury and semi-luxury products.

Clearly in these circumstances any unintelligent demands for a redistribution might well mean that there would be nothing to distribute. From such considerations some may argue that the present tendency to accept the demand for a wider participation arises merely out of the strategic position in which laborers find themselves at the moment and that consequently it will entirely subside as soon as the post war conditions develop.

My own feeling, as I have indicated, is that insistence of the employing classes upon such a viewpoint would indicate a lack of knowledge of the psychological forces which are developing out of the war. We have been too long accustomed to discuss business exclusively from the material point of view. We have assumed for instance, that men were dominated solely by economic motives by the desire for more goods, and that in pursuit of these motives competition was the all pervading determinant of business action. Here again psychological research has enlightened us, and we know that competition in the sense in which the economists have frequently used it, far from being a determinant of business action, is no longer obviously typical.

To develop this thesis to the end would obviously lead too far, but the lesson which I draw from the scientific study of business and from the observation of the way in which business practice and policies have developed leads me clearly to the conclusion that our success in meeting the business conditions which will develop after the war will depend upon our ability to approach the great problems of human relationship, (and here again I emphasize the problem of employer and employee), in an open-minded scientific attitude of mind.

If we insist upon shutting our eyes to industrial forces which perhaps for the moment are disagreeable to contemplate, we shall almost surely have before us a painful process of disillusionment. For my part I do not believe that the difficulties of the employing class in adjusting themselves to the new forces arise primarily out of a desire to keep for themselves a larger portion of the industrial profit. The greatest obstacle to a better adjustment in my opinion arises out of the viewpoint which is expressed by the oft-repeated assertion, "I am willing to make any reasonable concession, but I must control my own business." In this attitude of mind we have a clear distinction between the purely economic and what I should call the psychological factors in the employer's side of the problem we have the same thing on the employees' side when we make a distinction between a wider participation on the one hand and a more equitable distribution on the other.

If we can succeed through such conferences as this in shifting emphasis from division of profits to participation, and if also we can help to spread the idea that all parties in interest—workers, employers, and general public—are equally concerned in the efficiency of production, we shall learn to work together for common ends, and gradually approach a solution of our great business problem—the problem of industrial relations.

One of the psychological things that we very frequently overlook is

the pugnacious attitude that follows disagreement. It is not that we are all so selfish, but we all have a certain point of view, and we put our whole energy into making that viewpoint obtain. The question is as to where this demand for participation will lead. I believe it is a very real demand. I believe that the demobilization after the war will in many regards make the demand more acute, because the very fact that we are going to have an industrial equipment and a large labor force which it is going to be difficult to occupy immediately, and the very fact that labor force will be made up so largely of people who have made a great contribution to the progress of the world and to our institutions, will mean that we simply cannot let things adjust themselves on the basis of the economic reactions that will come when we have less demands upon our industrial equipment, and I am quite sure that if the thought which is being directed to these subjects in this country and in other countries continues, as I am sure it will continue, that this demand for a wider participation is something which we simply must meet. As to whether that will be ruinous or constructive depends very largely on the way in which we meet it.

I have great faith in the ability of people to see things if they sit down around the same table, especially if they sit down before they have got into such hopeless disagreement that they disagree just for the sake of disagreeing. We cannot afford, for instance, from the standpoint of efficiency alone, we cannot afford while we are going through these trying times we are bound to go through with, we cannot afford to lose any of the ideas which come up from below, and they come up much more rapidly than we think in the actual problems of management.

The question whether the demand for participation will be constructive or destructive depends upon whether we are as foresighted in working out machinery for that participation, making it an integral part of our industrial organization, as it does in the way in which we meet technical readjustment. Of course, we have a start in that direction. Much of the legislation which has been passed within the last ten or fifteen years has provided for some sort of co-operative decision of business problems.

Take for instance the minimum wage law. Practically all of those laws provide for a participation of the employers and employes and the general public in the determination of policies. But a thought that seems to me most important to emphasize in connection with the business problems after the war is, first of all, that they are going to be much more largely problems of human relationship than they are problems of technical organization. That is the determination as to whether we rise to this place of command that was suggested by the first speaker will depend much more largely upon the human problems than it will upon the problems of technical organization, and in the second place, the demand for the working out of machinery to make those demands constructive rather than destructive. We simply must not confess that we are going to fail with this problem of employment adjustment either during the war or after the war, and from that standpoint many of the problems which are facing us as war problems are the same problems that will

face us after the war. If we work out machinery for solving those problems now we shall be a long way in the direction of solving them after the war.

Of course, one great asset is our psychology during the war. So far as we are all looking toward a common end we are in a much better position to sit down around the same table and work out the problems than we would be otherwise.

I realize very well that I have contributed nothing in the way of fact to the discussion this afternoon. I have brought no experience specifically into this problem, although I think my conclusions rest upon some experience. But I do believe that we have got to think a lot harder. We have got to apply fundamental principles, and we have got to discard a great many of the rules of thumb that have been to too large an extent guiding factors with us in the past. These are problems which will require intelligence, and we must have a larger measure of light and a minimum of heat in the working out of these particular problems. (Applause.)

THE CHAIRMAN: Mr. Hotchkiss has been entirely too modest in saying that he has not brought anything to us this afternoon. He has brought to us a very constructive thought. The question of human relationship is one of the problems that are confronting us as industrial engineers, and we are to give more thought to it, more constructive thought to that one phase of management than any other which is confronting us, and when that is brought to our attention and emphasized then a real contribution has been given to us.

The next paper is "Mending Fragments from France in Canada," illustrated with one hundred stereopticon slides, by Mr. Norman A. Hill, general manager Carriage Factories Limited, Toronto, Canada. I take pleasure in presenting to you Mr. Norman A. Hill.

MENDING FRAGMENTS FROM FRANCE IN CANADA.

Mr. Norman A. Hill.

Mr. Chairman and members of the Society of Industrial Engineers, and the Western Efficiency Society and guests, my informal talk to you is called "Mending Fragments from France in Canada," because Captain Bruce Bairnsfather, an English officer, (who has been in almost continuous service at the front since the fall of 1914), when he was first wounded, and invalided back to England, called himself then "A Fragment from France." This appellation of the wounded soldier struck the popular fancy, and has stuck, and been perpetuated in the public mind by Bairnsfather's cartoons, which have appeared weekly in the "London Bystander," for over two years now, and which he has in turn permitted to be reprinted in little bound volumes of perhaps two dozen sketches each, and called them also "Fragments from France."

A few of these will be shown you in the slides which were loaned me by the Invalided Soldiers' Commission of the Canadian Government.

When I was in Rochester recently to talk on this same subject before the Employment and Service Group of the Chamber of Commerce, I saw in one of their papers an article sent out semi-officially, from the United

States Federal Board of Vocational Education; this article interested me greatly, in that it shows that the American Government recognizes the seriousness of the task of mending fragments of men. A brief synopsis of this article seems pertinent to this subject, and is as follows,—“If the scheme of the vocational board outlined at the request of the Senate as a basis of legislation, is followed the board predicts that “the returned American soldiers of this war will be cared for as the returned soldiers of no other war were ever treated.”

“He will not,” the board says in a statement, “be turned adrift on the world, dazed by his war experiences, with no support but a meager pension. Nor will he be immured in a soldiers’ home to waste his life in idleness. He will be given what every American wants—a chance to make good in spite of his handicap. Schools and classes of every kind will be open to him free, and there, under the best medical care while at the same time under the instruction of the best vocational teachers that Uncle Sam can employ, he will learn a trade which will make him self-sustaining the rest of his life.”

“There are at present approximately 13,000,000 wounded and crippled soldiers in the belligerent countries of Europe. In Germany alone, it is reported, 500,000 men are under treatment in the hospitals.

“During the next few months the return of wounded, crippled and invalided men from the overseas forces of the United States will begin and will continue thereafter for an indefinite period until the return of the overseas forces after the termination of the war.

Without taking account of more remote contingencies, it seems not improbable that 100,000 disabled men will be returned during the first year of fighting and that at least 20,000 of these men will require total or partial vocational re-education in order to overcome handicaps incurred in service.

“A second year of fighting may add 40,000, a third, 60,000, to the number requiring such re-education, making a total for three years of fighting of 120,000. This assumes 1,000,000 men overseas the first year, and an increase of 1,000,000 overseas in each succeeding year.

What the vocational board is planning for the disabled soldier and sailor is, first, the general program, and second the special educational problems. The offices of the surgeon-general of the army and the navy have charge of the disabled men so far as their physical rehabilitation is concerned. The labor department has taken up the matter of placing these men in industry. The bureau of war risk insurance is charged with the insurance phases of the matter; and so on. Through inter-departmental conferences all these boards, commissions and agencies have been searching out every possible item in the necessary program, and when comes the final drafting of the legislation it will have at hand information upon the problem from every angle and every corner of the globe.

It will be the plan to re-establish skilled men in trades at which they worked before the war, for the reason that the ranks of skilled labor will be depleted and there will be no supply of skilled men available after the war from Europe, as every country in the war is experiencing and will continue to experience a great scarcity of skilled labor.”

Now, I would like to read to you a statement of twenty-eight facts which are presented to every invalided soldier on his return to Canada, by the Invalided Soldiers' Commission, in printed form on a little card which he can carry handily in his pocket, as follows:

EVERY DISABLED SOLDIER SHOULD KNOW THAT—

There is no such word as "impossible" in his dictionary. His natural ambition to earn a good living can be fulfilled. He can either get rid of his disability or acquire a new ability to offset it.

The whole object of doctors, nurses, and instructors, is to help him in doing that very thing.

He must help them to help him.

He will have the most careful and effectual treatment known to science.

Interesting and useful occupations form a most valuable part of the treatment in Convalescent Hospitals and Sanitoria.

If he cannot carry out his first duty by rejoining his comrades at the front, and if there is no light duty for him with the Canadian forces overseas, he is taken home to Canada, as soon as his condition and the shipping facilities make this possible.

His strength and earning capacity will be restored there to the highest degree possible, through the Invalided Soldiers' Commission.

If he requires an artificial limb or kindred appliance it will be supplied him free.

Every man disabled by service will receive a pension or gratuity in proportion to his disability.

His pension cannot be reduced by his undertaking work or perfecting himself in some form of industry.

His pay allowances continue till he is cured or till his pension begins.

An extra three months' pay, field pay, and separation allowance when there are dependents receiving such allowance, will be paid to all men returned from overseas and honorably discharged after at least six months' service—with certain exceptions, such as members of the Permanent Force and Federal or Provincial Civil Service, who can step right back into their old positions.

If his disability prevents him from returning to his old work he will receive free training for a new occupation.

That full consideration is given to his own capacity and desires when a new occupation has to be chosen.

His own will-power and determination will enable him to succeed, both in the training and in the occupation afterwards.

His maintenance and that of his family will be paid for during the training he may receive after discharge, and for a month longer.

Neither his treatment nor his training will cost him a cent.

His home Province has a special Commission to assist him in Finding Employment on discharge.

Hundreds of towns and villages have committees, associations and clubs, to welcome him on arrival, and to help to secure a position for him.

The Dominion and Provincial Governments, the Municipal authorities and all sorts of employers, give the returned soldier preference in filling vacant positions.

The returned soldier wishing to take up land and farm it, will be helped to do so, under Federal and other settlement schemes.

The Invalided Soldiers' Commission exists to carry out his restoration and training in Canada.

The Board of Pension Commissioners exists to distribute the pensions provided by his country for him and his dependents.

The Invalided Soldiers' Commission and the Board of Pension Commissioners are in the position of Trustees, appointed for his benefit, and representing the whole people of Canada.

Therefore, he should write direct to the Commission or the Board if he needs advice or help.

There is apparently a misconception in the minds of a great many people in the United States today as to the actual fatalities of war, and the helpless cripples returned from war, when expressed in percentages of the troops who have seen actual service at the front. Now as to cripples returned, our experience in Canada warrants a statement that practically all of the men injured in battle can be reclaimed to productive citizens in industry. When the physician and surgeon have done all they can for a wounded man, or in fact sometimes before they have finished with him, the educationalist steps in and begins rebuilding this man both mentally and vocationally for useful occupation.

Let us consider some actual statistics in round numbers, as follows: Canada has raised, and sent abroad an army of over 458,000 volunteers and is raising an additional 100,000 under the Compulsory Service Act. This army of over a half million men is produced from a total population of but seven and a half million, and when one remembers that there are approximately two million French Canadians who until affected by the draft came very far from doing their share, you can almost say that a half million fighting men were drawn from a population of not over six million people.

Now as to actual casualties, perhaps the greatest misconception is as to the number of soldiers made entirely blind. This percentage is approximately only one-eighth of one per cent of the 35,000 returned men of the Canadian Expeditionary Forces. This is remarkable, especially so, when pre-war estimates on total blindness were placed at from one to five per cent. The next most surprising figures, at least to me, is that less than 4 per cent of the Canadian casualties are cripples classed as amputation cases, and when you remember that amputation cases include not only the loss of an arm or a leg, but include as well even the loss of one finger, this low percentage is also remarkable.

Of all the invalided soldiers returned to Canada over 20 per cent are on account of disability due to disease, and of this 20 per cent not less than a half are tuberculosis cases. These figures then would indicate that we need not look for a huge army of helpless cripples and blind when our Sammies have all returned from the front.

Before showing you the pictures I may mention that one of the chief

things in this course of reconstruction of men is to combat, and overcome the habit of idleness, which is fixed upon them in the convalescent period, particularly if a man has been for some months in a hospital in England, and in all cases back of this, they have had the semi-idle life of the soldier in the field, which is generally brief periods of intense activity, and long periods of waiting, or comparative utter idleness. It is therefore found that just as soon as possible it was necessary to interest the convalescents in some kind of work, and once the functional re-education of actually manipulating a stiffened member from semi-paralysis is thru the sooner this work can be made of a useful variety, the better the results for the men.

Canadian experience so far indicates that at least 90 per cent of the returned soldiers can go back to their former occupations. There are now approximately 4,000 returned men undergoing re-education and vocational training in Canada, out of some 12,000 which the Commission has in its various institutions. Of this 4,000 about 1,000 are preparing for different trades or occupations than the ones they were in before enlisting. These men under vocational training have sufficient pay allowances to provide for them during instruction. These vary from \$46.00 a month for the single man, up to about \$120 a month for the married man with a large family. The Canadian pension is based on physical disability only, for example, if the man loses an eye or one leg below the knee, he is considered 40 per cent disabled, and receives 40 per cent of the pension allowed for total disability. If he loses a hand, or loses a leg above the knee, he is considered 60 per cent disabled, or if he is an extreme case of heart leakage, or an incurable tuberculosis, he is considered to have a case of total disability, and if he needs an attendant, receives an extra allowance for this expense.

The old pension scale has recently been increased 25 per cent, which means a maximum pension of \$50 a month for single men without dependents.

Now we will have the pictures, which show the progress of the wounded men from the communication trench back to his re-absorption into industrial life.

On motion the meeting adjourned.

EIGHTH AND CLOSING SESSION.

Friday Evening, March 29, 1918.

BANQUET.

WILLARD E. HOTCHKISS, Toastmaster,
University of Minnesota.

THE TOASTMASTER: I want to call your attention to the speeches of Major Gilbreth that are distributed throughout the room. I would feel that I missed an opportunity if I did not express my own personal regret in not having Major Gilbreth here this evening. I understand an appropriate resolution has been passed with reference to his illness. I cannot forego the privilege of expressing my own personal sense of deprivation

of not having him here. I think you all know how much he has done in connection with The Society of Industrial Engineers, the splendid service he has been performing along the lines represented by this meeting. The Secretary, Mr. Dent, I believe has some announcements to make.

MR. DENT: I am sure the members of the two Societies and many of our friends will be glad to know that this morning I received another letter from Mrs. Gilbreth. She writes that Major Gilbreth continues to improve slowly but steadily, and that "All day long I think about the Conference in Chicago and what we are going to do for the crippled soldiers." (Applause.)

On the program for this evening we had Major Harry E. Mock. Many Chicago people present know him very well. I received a telegram from him last night stating that he would not be with us, and I received a letter from him this morning. Here is his letter:

"Washington, D. C., March 27, 1918.

"Dear Mr. Dent:

"After making all my plans to attend your meeting in Chicago, it is hard to express my deep regret at being unable to do so. Some very important changes have taken place in our Division this week which make it impossible for me to get away. These changes necessitate my going to New York tomorrow, and it will be impossible for me to finish my work there in time to reach Chicago by Friday night. Will you explain the situation to the members of both organizations.

"Again thanking you for the honor of being asked to speak before the Society, I remain,

"Very sincerely yours,

"HARRY E. MOCK,

"Major Medical Reserve Corps."

The first speaker on the program is Mr. James O. Craig of the Business Men's Clearing House, and he will speak upon the subject. "The Shifting* of New Man-Power to Emergency Production." I take pleasure in introducing Mr. Craig. Applause.)

"THE SHIFTING OF NEW MAN POWER TO EMERGENCY PRODUCTION."

BY JAMES O. CRAIG, President Business Men's Clearing House.

Men, money and machinery are the controlling factors in this great world's struggle. Money is incidental inasmuch as there seems to be an inexhaustive supply. Machinery, while certain kinds are scarce, is under control. Men are the controlling factors of both.

Having spent fourteen years in dealing with the high grade man problem, that is, finding the right man for the right place, and having spent upwards of a million dollars to maintain a clearing house or a centralized employment plan, and having placed upwards of a quarter of a million people, naturally it has been my privilege to witness vast changes both in making of men and large industrial concerns.

At the beginning of the War, many plants were obliged to increase their production several hundred fold. Plenty of money was available,

equipment could be secured and made, but the first consideration to develop this wonderful increased production was to find sufficient experienced executive control to handle the finances, machinery and labor properly.

The old Civil Service idea of developing men in an organization was wiped aside and the men that were trained were absorbed by the mammoth organization as quickly as the sands in the desert would absorb a drop of water.

New men were demanded. They had to be found regardless of price and conditions. The salaries of manufacturing executives, especially, jumped two and three hundred per cent because of the demand.

It was remarkable to note the patriotic spirit displayed by the heads of great industrial organizations when asked if they would give up their strongest men to a manufacturer making war materials. There has been a wonderful co-operation among the manufacturers that never has been known nor has it been discussed. In this way for an illustration:

A certain man was needed to build a new industry. He paid an income tax the previous year on an amount upwards of fifty thousand dollars. When he saw the necessity of this work to help win the war he was willing and glad to accept the proposition at \$30,000 per year. His employers agreed that this man could be of more service to this work which would directly help the Government, and although at a great sacrifice they were obliged to let him go. However, in the meantime during negotiations, even though he had accepted the position and had been employed, his concern took over an enormous amount of Government business and it was decided by his present employers and the new employer that he should remain where he was because the two classes of work were of equal importance to get materials "Over There." Another man was recommended who accepted the position at \$25,000, making a sacrifice of at least \$15,000 in order to do his bit.

During the period of the War it has been my duty to place several hundred men in war work, both with private industrial concerns as well as with several branches of the Government. So far I have not come in contact with one single selfish motive on either employer's or employee's part when the shift of a man was necessary.

I have always assumed the attitude of realizing the importance of one class of work to another and I would not move a man from one line of business if it would effect our war production even one per cent. I have been a factor in the movement of the big executives and have traveled the United States several times the past seven or eight months finding and placing the strongest man power, that had to be used to develop re-organization and jam over emergency production at the rate which has been an alarming surprise and satisfaction to those who have been in the habit of doing big things.

It seems peculiar that there have been very few changes in this man power on new work, in industrial lines especially. The big man power is a known commodity if properly analyzed by actual experience.

It is almost a certainty that if a man in the prime of life had charge of a plant of ten thousand men producing a given number of certain

quantity and quality and that if put in a new shop where he is familiar with at least ninety per cent of the work, he can do it for the next fellow. In other words, if a horse has a two-ten gait today and if he is in the same condition it is reasonable to suppose he can do the same thing tomorrow.

At the beginning when the shift of this executive power became necessary, we hesitated to refer to the patriotic duty for fear that it might be misunderstood. We soon found that every executive was champing at the bit to do something and we soon found that the employer was more than glad and proud to offer his best men.

A peculiar and almost critical situation developed when we first entered into the war because a great many of our manufacturing executives, making twenty-five to one hundred thousand dollars per year, were in a financial position to devote all of their time to the Government and offer their services. Many of them were enlisted as Captains, Lieutenants, Majors and other commissions and they served in an advisory capacity.

You can recall a great many of our men of the greatest manufacturing strength who have absolutely wasted their energies by making reports and being placed in subordinate positions where they became of no value or strength from a productive standpoint as a whole. It was found there was a dirth of this kind of men when the big orders for war materials were given out, and it was found that those men were needed in many cases in the same industry they left, but in the meantime had tied themselves up in such a way that they thought they should not make an effort to return to civil life, although they were not doing better work than perhaps a fifteen or eighteen hundred dollar man could do.

Roughly speaking with a subconscious knowledge of this executive strength in America and without actual statistics, it seems to me as though there has been a waste of at least 90 per cent of our executive manufacturing strength tied up and controlled, because through their genuine patriotism they were permitted to become subordinates, which automatically stripped them of their executive powers, not only robbing their own industry of their own services, but put them in a position where they were doing petty detail work and not running full strength.

You Efficiency Men can realize the importance of this condition. You have personal friends that have been making twenty-five and fifty thousand dollars a year and were powers in civilian life who left their plants to be manned by new and lesser competent men, while they themselves were of no real genuine value.

Many of these men have wearied of making detailed reports to their superiors who knew not what they were talking about in many cases and who were not big enough by actual experience and training to comprehend the enormity and practicability of the plan.

The snarl in our production as a whole is clearly the result of improper distribution and application of man power. Although we are all working in the same direction, circumstances have placed many incompetents in authority over situations which they assume and, with best in-

tentions, thought they could control. However, water has to seek its level. Many of the big fellows under this control have gone back home and to their own plants and are doing good work.

There should be an inventory taken of the executive power that is running loose in this country and every man should be placed where he could give his full strength.

Hundreds of big men have started to work this morning and have had the responsibilities of factories employing five, ten and twenty-five thousand men loaded upon their shoulders before night.

It is surprising to note that many of these organizations do not even maintain a manual or a chart of their organization showing the functions of the various departments, many not even having necessary blueprints and drawings. This great emergency production should teach every manufacturer that he should have a written record of every operation so clearly defined that the new man could understand it quickly. It should also teach us organization to the extent that we should not be caught without proper assistants, that is, there should be a backup for every job in the institution.

Although America has led the world in production and in spots we seem to have wonderful systems and efficiency, at the same time as a whole we are terribly sloppy. By compiling statistics and information most of our operations in connection with war work can be standardized. Given costs under given conditions produce a definite result. This information should be recorded.

Your organizations, by this joint conference is a wonderful step toward the co-ordination of our great industrial system.

A great powerful manufacturing executive cares nothing for detail. He wants results. If he were a man of powerful action, he could not do detail work. If he were a wonderful detail man, he would not be blessed with the power of using the necessary punch. There must be a combination of the detail and the recording elements along the slam-bang production fellow, because no matter how speedy or what strength a big fellow may have to be accurate he must have his records.

One of the great developments of our wonderful production in this country the past few years has been the result of injecting new blood and new ideas. You Efficiency Men can recall many an organization that has been successful for, we will say, thirty-five or forty years. For some reason they were slipping. The first trouble you discovered was some czar, who had lost his punch, but through a combination of circumstances had surrounded himself with the political power to domineer at any cost. You also recall that you could not make any progress in that institution until the czar's power was broken and the work was properly delegated to men competent to handle the work.

A democratic control of the business under the general management of a man who is there because he actually produces the goods and can be removed without friction when he loses his punch, and we all lose that some time or other, and by the careful training and development of executives by forming a continuous chain of full strength man power working under the right environment, means a successful business.

Criticism, just or unjust, has "busted" more organizations and men than perhaps any other cause. Good men cannot stand too much criticism because they have too much individuality, personality and feeling. The good man must feel that he is right with his superior and if he is constantly criticized, even though he is wrong, he will eventually die within himself and crawl away, which means the employer will lose a very good man and the employee will lose a good job.

Personalities, likes and dislikes and misunderstandings can and must be avoided to maintain a successful business. The boss should take the attitude of instruction and education rather than criticism. He should not have any likes or dislikes in regard to personalities. He should be absolutely impersonal at all times, not 90 per cent of the time, because if the boss is off his feet, in one day's time he can destroy the pep of an entire organization.

Then, too, the employee should realize under the existing conditions that everyone has their off days, even the boss. There should be some effort made to understand each other. They should give and take.

Welfare work is as much misunderstood as our business. It is placed in the position that a professor who never employed a man in his life but who has read many books on psychology, can offer the most caustic criticism and even legislate and write books on how to run a welfare or employment department.

The function of the Welfare Department is to bring about understanding between the employees and the management of the firm. Permit an employee the privilege of admitting a mistake without losing his scalp, let him be honest.

Last week I visited a plant employing twenty-two thousand men. The organization has been put together in the last eight months. I was told by the man in charge of this work that he had hired 100,000 men to secure the 22,000 on hand. There is a loss in the turn-over of 75 per cent.

This fellow is a practical employment man. He has hired thousands of laborers. He set about and has a most wonderful industrial relations department. During the eight months he has built a wonderful hospital, including X-Ray Machines, Operating Tables, twelve Ambulances, employing fourteen company physicians, and insurance and transportation methods are being improved upon, safety first plans, and they are already housing five thousand men in beds that are as clean and rooms that are as well ventilated as you can find anywhere. Their kitchens are as clean as can be, the food the very best and offered at cost. After giving several hundred thousand men meals, there was a net profit of twelve dollars, which shows there was somebody in that commissary who knew his business.

This Manager of this Welfare Department has set about to know why every man loses or leaves his job. He has a staff of about eight or ten men, temporarily, who have a long talk with every man that is discharged or leaves.

This fellow has built a railroad, has built a police force of six hundred men and he has built up a sanitary system that is wonderful. Every-

through the institution was, "There it is, here it is. It's not going to be thing seems to be in its place and his one favorite remark while traveling here but it's here now."

He was simply a live, red-blooded fellow that many of you fellows have never even heard of. He could not write a book if he wanted to and I doubt if he would write one if he could. He is too busy getting results. But somebody should write a book on the splendid work he is doing.

Let us take the theory out of our work and put men on the job that absolutely know their business. Our plan of employment, that is the centralized idea, has to come. There should not be any more confusion in the movement of man and woman power than there is in the movement of dry goods or food stuffs. The same confusion existed until the wholesale houses were established, that is the clearing house plan.

In the near future there will be a convention held of all of the high grade employment men in the United States to swap ideas and to learn what the other fellow is doing. This will include private agency men who, by the way, are moving 95 per cent of the labor that goes through agencies and it would seem as though they would know a great deal on the subject.

The Labor Department at Washington gathers its statistics in regard to the movement of labor from agencies maintained by the U. S. Government and the various states. The Government and state agencies represent possibly less than 5 per cent of the movement of labor. The private agencies represent the other 95 per cent. This matter was brought to the attention of the Department and they realize they are reporting on 5 per cent of the movement of labor, but it takes legislation to enable them to report on the 95 per cent.

Why shouldn't the Government provide that all private agencies make a report to the Federal Department as to the number of people they place and the kind of people they place?

Why shouldn't the U. S. Government permit interstate commerce privileges in the movement of men? Did you know that in the south at the time when several negroes were imported to the north that several states enacted a law and it is on the books at the present time that it is unlawful to move one employee from one county to another. There evidently was no opposition or any sane judgment displayed and therefore it became a law and I would say that this has China beat a mile.

Why shouldn't there be a federal law dealing with agencies that place nothing but labor, and by the way, this work will be handled by the Government Agencies, and also have a law covering the higher grade agencies placing executives, teachers, etc.

Many of you men do not know the difference between the high grade agency and the labor agency. Laws today control the two classes.

You Efficiency Men are in a new business which has been much misunderstood. The reason Efficiency Men are required is to control the human element. We deal with the finding and placing of this human element and are an enormous factor, which is evidenced by the splendid plans that are being carried out by our own Government. The first con-

sideration to build ships was men. It is men, men, men. But it is to be hoped that if the proposed bill goes through, and it should, which will cost us \$750,000 the coming year and a million and a half the next year for the maintenance of Government Agencies, we shall have a practical employment man at the head of that work.

THE TOASTMASTER: The next speaker on the program is Mr. Montague Ferry, who has been conducting investigations for the Emergency Fleet Corporation on the Great Lakes of which he will tell us something. Mr. Ferry.

MR. FERRY: Mr. Chairman, Ladies and Gentlemen:

My subject has nothing directly to do with the work of the Emergency Fleet Corporation, although I propose to draw some examples from that work to illustrate my points. Mr. Craig has covered at some length the question of shipping man-power, with particular reference to executives. My talk will deal almost altogether with a different kind of man-power, the man that handles the shovel, swings the hammer, and is generally called a laborer. We all know that when through war or some other circumstance we remove from the United States of America a certain number of men, something must be done to replace those men in the industries they have left. There has been a good deal of talk in the previous meetings of this Joint Association regarding substitution, that is, putting women to work where men have been before. That is one means of meeting the emergency. Another means is greater efficiency in methods, processes and elimination of waste, and still another means is the inauguration or the implanting, if you please, of what is generally known as team spirit in this country. Team spirit is an intangible thing, except to the French, who are very much more expressive, I believe, than we are. They have two words that really mean team spirit. One is *morale*, which we see very frequently in reports from the front; the other is *esprit de corps*, which is not so frequently seen, but which has somewhat the same meaning. In our language team spirit is about as close as we can come to the thing that has engaged a great deal of study and attention from me and which I believe will engage a great deal more study and attention from efficiency men and factory men in general in the near future.

We have all seen the college team. We know that the college football team is one of the finest examples of drive energy that could be cited. We know that it is not always the most powerful team, as far as beef and brawn is concerned, that wins the game. We have seen men taken out of football games crying and fighting because they wanted to stay in and do their part. We have seen prairie baseball teams and football teams that have no relation to college, where the same spirit has been in evidence, and by that I am trying to prove to you that this matter of team spirit has not necessarily anything to do with the institutions of higher learning. It is there, but it is also out on the sand lots, wherever men and boys play.

There is another example of team spirit. I do not believe we need to dwell on it to any serious extent, but it is the kind of team spirit that

is going to make the German autocrat awfully sorry that he monkeyed with the American buzz-saw. (Applause.)

It is that same spirit that made a bunch of American engineers, primarily not fighting men, sail into a bunch of Germans greatly superior in number with anything they could get their hands on and if they could not get a shovel or a pick they used their feet and their fists. Americans got a reputation right there that I think will satisfy all doubts on both sides of the fence as to team spirit in the American trenches.

If this team spirit, as I have chosen to call it for lack of a more expressive term or better definition, is so powerful a thing in college athletics, in the trenches, and in the sand lots, it seems that it should be possible to inaugurate and instill at least a measure of that spirit in industry. I realize perfectly well that industry has to do with money, and that while all of us love money, we cannot possibly become sentimentally interested in anything for which we are paid. That is the accepted attitude, the general attitude toward anything resembling an attempt to inaugurate or instill team spirit in industry. You will understand that this question really is an entirely different thing from welfare work, efficiency, employment methods—more intangible of course, but still a very big factor. As I see it, the employment methods, that is the question Mr. Craig has spoken of, getting the right man by questions and analysis, fitting him into the job for which he is best suited; the question of medical supervision, seeing to it that the men are kept in the best possible physical condition; the question of welfare work in general as it is ordinarily understood; all these things have to do with contentment. They make a man contented. The efficiency man, the efficiency expert, if you please, comes in and shows that man how the thing can best be done. He educates that man in his work. Each of the two and a great many other specialized branches have a very definite function in business, but none of them get the sort of spirit that is so in evidence in teams in athletics, and I might say in the trenches.

Mr. Piez of the Shipping Board recently remarked that if a man in the shipping yard gave his full effort to the work he would build in the course of one year sixteen tons of shipping. He stated that at the present writing the way the men were working now each man was building approximately nine tons of shipping. Now, Mr. Piez was not promulgating anything very new there. Men interested in the labor question have said for some years at least that the average working man gave approximately sixty per cent of his effort and that forty per cent was pure waste. They account for this in different ways, one of the principal ways being to say that organized labor prevents its men from giving full effort lest there be fewer jobs. This may or may not be a good alibi. The fact remains that in the average office where the employes are not unionized the percentages of sixty and forty would probably show a worse ratio, so that while I hold no brief for the union in every case, I think that it is a little bit out of line to say that the union is entirely responsible for the slacker. You can well imagine that this man of team spirit would have an enormous effect in cutting down this labor waste, this withheld effort, as it is called. The most radical, the most optimistic idealist would not hope

to get one hundred per cent effort, but assuming that in the case of the ship yards as a case in point, we could take those men and get them to give us, instead of sixty per cent of their effort, which according to Mr. Piez is what the yards are getting, supposing we could get them to give us seventy per cent. Stop and think for a moment how much faster and how much more accurately the submarines would have to work if that were the case. Small percentages in a situation of this sort mean big things.

Now, lest I be placed in the catalogue of pure theorists and idealists, and I have no doubt that the thought is running through many of your minds that this is a lovely dream, a pleasant thought, but lest you put me too far into that catalogue I want to cite a few cases where this team spirit has been actually created in industry, in institutions that are run primarily to make money for their proprietors.

In one plant consisting of about at the present time. I believe, seven hundred and fifty people, men and women both, they had a situation two years ago where department heads got most of their fun out of life fighting with each other, with their subordinates, and more or less encouraging bickering among their employes. That institution at that time presented a soft mark—pardon the vernacular—for any unprincipled agitator that came along.

The team spirit idea was introduced into this plant about two years ago in a modest and inexpensive way. In two years it has not cost the institution over seven hundred dollars in cash. The things done were extremely simple and represented more thought and care and patience than they did expense, and yet at the end of two years we have the spectacle of that institution going through a hurricane of labor trouble without anybody walking out of their doors. We see their production raised; we see a spirit in the plant where the employes themselves have come into the habit of calling it the family; we see better merchandise; and we see a very remarkable elimination of waste. As I say, there was no mathematical certainty, no cut and dried formula there, no slide rule work. There may have been science mixed up in it, but the people who did the work did not consider it that. It was human—human stuff from first to last. For instance, in order to overcome a very desperate feeling of antagonism between office and factory which started with the heads and run through the ranks, there was organized in that institution a bowling league. The spectacle there after the first two or three months when the newness and the strangeness had worn off was not only the men, the teams from office and factory competing on a very friendly basis, but through this little underground stuff, which was one of the main parts of the scheme, the families of the men coming down as gallery. The wives of the men in the office mingled with the wives of men in the factory. That social line was wiped out to such a beautiful extent that you could not find it with a microscope after six months of that sort of treatment. Today those people are a fine example of team spirit. It sticks out everywhere you go in the plant. And as a culmination, you might say as a mark of confidence, as an appreciation on the part of the management that those people are heart and soul with the institution, they are, according to Mr. Roger

Babson, whose authority I am willing to accept, one of the first if not the first institution in the country to adopt a plan that has proved exceedingly successful in England, commonly known as the Workshop Council Plan, I believe. I am not authority personally for the success of that plan in England. I do not know just how far it has gone, but I do know that in this institution it has worked to perfection.

I want to detail that a little more because I think you will hear a great deal of it in time to come. Each department elects two employes as representatives to sit on a board consisting of about thirty people. Those thirty people take up and settle all grievances of workmen or employes. If the representative of the individual who feels himself cheated, aggrieved or ill-treated can settle the case on the ground, he does it; if not he can be forced to bring it before this Board.

Just to illustrate the results of the work that went before the formation of this Board and the reason for the employer's confidence in starting the Board, I might say that in approximately six months' time there has been but one decision made by this employes' Board to which the management themselves could take any exception whatsoever, and in speaking of that decision they are very frank in saying that they are not altogether certain that that decision was not right. I will admit freely that without previous preparation a plan of this kind might work havoc, but I am telling you the facts as they are.

In another institution which has played everything for team spirit, and a very strongly unionized institution, whereas the first instance was an open shop, the men were called out on strike. They told their business agent that they preferred to talk it over with the "old man," as they called him, before they went out on strike, and the net result was they told their delegate that they would not strike; that they had been treated pretty well and they had a little work on hand and they decided to stick around awhile and see what happened. They were threatened with loss of their union cards, but they stuck to their original intention. They did not strike, they are still union men and still carry cards.

In another case, a certain large institution that employs a considerable number of men who belong to a very, very strong union, a union which has things mostly its own way. This institution has used the bonus system, which neither of the two preceding cases know anything of, but these people have used the bonus system and a lot of human stuff with it, and their men did not want to go out. They knew they were going to lose some bonus and they were going to have a lot of readjustment, and as a result of their loyalty to that one institution they actually prevented a general strike of the union in something like ten or a dozen other institutions. In other words, the ability of one management to handle its men right carried the load for the whole industry of which they were a part.

Now, the last example of team spirit is something that took place in a ship yard last winter. We all know how severe the winter was, and in one case at least there were four feet of ice in the slip; the boat that was ready to be launched was not equipped with skates, and there

was another boat waiting to be put on that particular berth. The natural thing to do was to cut the ice out, and they did it with axes, picks, dynamite, ice saws and a crane to lift the dipper out on to the bank. The significant thing is that the men themselves working in that ice and in a temperature a great deal below zero had to be ordered off the work, and when they launched that boat on schedule they had every bit as much pride in their achievement as any football team or any baseball team or any unpaid team that could be imagined.

Now, there are no two cases where this work has been inaugurated where the methods are exactly the same. There is no cut and dried formula. You cannot do the thing with a slide rule. It never will be done that way. Just as the human element differs, just as there are so many different phases of the human character, so every case we run into in an industrial plant is different from every other case. Some of the things that have the great effect—and I am going to just hit the high spots so to speak—are the result of competition, both within and without the plant. Good natured rivalry among plants build up a certain team spirit for the plants at large. I do not attempt to explain that. But the thing has happened too often to allow of argument. Another thing, and of course it is perfectly obvious that where a team from this plant is playing a team from that plant over there, there is rivalry between the two plants which naturally leads to more team spirit and loyalty on the part of the teams to their own plant.

Another thing is the question of creating interest on the part of the men in the product. Pretty near any product if it is properly analyzed can be made interesting. It goes to all corners of the world; that it is this, that and the other thing; it has a certain function to perform. That men that make that product should be told those things. Give them a chance to use their imaginations. Let them think while they are doing this work why they are doing it, what use that product is to be put to. It helps a lot; we all know it.

Another factor, which is more or less common, I think a good many plants have it, is the plant newspaper properly run. If that newspaper is handled correctly and has a certain definite purpose, that is, to create team spirit and loyalty by sane, human, everyday, honest-to-goodness, man-to-man methods, it is a great factor, but you can never expect to get a plant paper to be any marvel of literary perfection, because the two don't go together. The minute you get a fine paper, that is, a fine paper from a literary standpoint, it is not couched in the terms that workingmen can understand or want to understand. He wants the kind of stuff that comes straight from the shoulder without a great deal of varnish or garnish or lace, or anything of that kind, and it must of course ring absolutely true.

I have used most of my time. I just want to add this: As I said before, this proposition is sufficiently tangible, but it is hard for the average man to tackle it. He says, "Fine business if we can do it, but we cannot get our fingers on it." As a matter of fact, the thing is remarkably simple. It is about ninety-nine per cent will to do, the desire to get the spirit. That is about ninety-nine per cent of the answer. Prac-

tically any man if his will to do is in the right shape, if he is willing to use his heart as well as his head, can get that result. But there are too few men, too few managers, too few production managers, too few general managers, and too few proprietors that have the imagination to tackle it, and it is not a hard thing to do.

The three biggest factors, I think, generally accepted nowadays, of waste in industry are labor turnover, which Mr. Craig covered very clearly; strikes, with which we are all familiar, and this question of withheld effort to which I have referred.

I just want you to think for a minute of the effect of team spirit as I have outlined it on these three recognized big factors in economic waste. If a man wants to win, if he wants to do the best work, if his heart is in it as well as his hands and his mind, there is not going to be any forty per cent. of withheld effort, any more than there is forty per cent. of withheld effort when he is out there playing football, or when he is out playing baseball, or when he is out rowing a boat, or when he is over there fighting in the trenches. We do not hear of any withheld effort in the trenches, not by a great deal. It is a thing to think about principally, and if I could feel that here and now I had sowed just one little germ in minds older, more experienced and keener than my own, if I had inspired some man or some men to think about this thing until they got the nerve to go out and perfect it, and think about it as though it were a tangible, definite thing you could get your fingers on, I would feel mighty well repaid and feel that I justified your attention. I thank you. (Applause.)

THE TOASTMASTER: I am sure we all feel very much gratified to have a thing that we recognize generally, given such importance and presented in such a forceful and clear way. The last paper of the evening will given by Mr. Lew R. Palmer, Acting Commissioner Pennsylvania Department of Labor and Industry. His subject is, "Pennsylvania Plan for Meeting After-War Conditions."

MR. PALMER: Ladies and Gentlemen: When the original program came to me there were four speakers on it, and the first duty of the last speaker in every instance is brevity. This is my printed, written address. I did not write it, and therefore I feel unprejudiced and unbiased. I am privileged to say that it is well worth reading. There are some twenty pages. The title is "Pennsylvania's Plan for Meeting After-War Conditions." My assistant, the Auditor of the Department under my direction, compiled some information as regards our activities in line with the work that you ladies and gentlemen have been discussing here this afternoon. I will just run through the summary of some of the phases; he has divided the subject into some five or six phases.

The first one covers a description of our Emergency Public Works Commission that has been established to investigate and to relieve unemployment if such should develop after the war. This Commission is composed of the Governor, the Auditor General, State Treasurer, and the Commission of Labor and Industry, and is backed by an appropriation of \$40,000 with more to follow, if necessary.

Number 2. A Commission of Public Safety, an office composed of the Governor, our military man, our Adjutant General, the Auditor General, and State Treasurer. This is backed by an initial appropriation of \$2,000,000 with a promise of as much more as we need.

Number 3. The above Commission have appointed a State Committee on Public Safety in connection with the other State Councils of Defense. This includes a large personnel of public citizens constantly active in promoting war aims of the Nation.

Number 4. A Commonwealth Relief Committee has recently been appointed by the Governor, including as Chairman the Adjutant General, the Commissioner of Health and the Commissioner of Labor and Industry.

Number 5. A State Committee for reconstruction, re-education and placement in industries of Pennsylvania's crippled through war service.

The Department of Labor and Industry has already accomplished considerable results along the phase that they are directly interested in, that is, in the employment side. A questionnaire, which some of you are familiar with, has been sent out to thirty thousand of our industrial leaders and managers throughout the State of Pennsylvania, and we have in response already catalogued and card-indexed some 30,710 open places, places open to our Pennsylvania soldiers when they need such places after the hostilities are over.

But we may have our plans, we may have our laws, we may have our unlimited resources, we may have our mighty armies afield and afloat, but without the purpose, the spirit to win, the war is lost. But thank God, the spirit of '76 still lives in Pennsylvania. (Applause.) Nine million of our liberty loving people stand behind the Nation's flag, and of those nine million there are three million war workers, and never before has the manpower of that old rock-ribbed State been of such vital moment in sustaining the very life of the Nation, for on the products of her mines and mills depends in no small measure the success or failure of this great world war, depends the life or death of that liberty for which our forefathers so freely shed their blood at Valley Forge and Gettysburg. To this, our mighty industrial army now toiling in the trenches of labor, led by our stalwart captains of industry, comes a call, a call from those four million already slain, a call from heart-broken Belgium, a call from desolated Serbia, a call from bruised and bleeding France, "Have we lived, fought and died in vain? Will you who still breathe the free air of America stand firm, for through your united effort and strength can we, even in death, still win?" Yes, we of Pennsylvania have heard the call, and this is our pledge: These same dead shall not have died in vain. And democracy shall ever be privileged to exist unmolested by malignant purpose of a militant autocracy, saturated with the accumulated crimes of the darkest and most barbaric ages, and here is to the day when that predatory Potsdam gang shall surrender its claim to divine right or else be wiped clean from the face of a regenerated world.

"Pennsylvania's plan for meeting after war conditions" is an erroneous title for my remarks if it conveys the impression that Pennsylvania is not today endeavoring constantly to meet "*during war*" conditions and planning unceasingly to that end. Those plans while embracing

practically every condition that can be born of this great war war, center mainly in the Department of Labor Industry in Pennsylvania. Unusual industrial conditions are already upon us and, while coping with them daily, we are developing a program which, it is hoped, will automatically culminate in a plan to promote the welfare of labor and of industry even when hostilities cease in the field and the men now under arms return either physically handicapped or sound to take up again the tasks of industry.

The economic conditions that may follow the cessation of hostilities and the problems to be met, along purely economic lines, when reconstruction succeeds destruction. I shall not attempt to predict nor discuss at this time. I may in passing, however, point out that Pennsylvania is preparing to meet actual conditions after the war whether those conditions produce unusually active industries or a stagnation in industrial fields. If what might be called the unexpected occurs and a period of unemployment follows the war, Pennsylvania is in a measure prepared to cope with just such an emergency by an Act passed by the last legislature and approved by the Governor, July 25, 1917, creating an Emergency Public Works Commission, composed of the Governor, the Auditor General, the State Treasurer, and the Commissioner of Labor and Industry. By that legislation, it is the duty of the Industrial Board of the Department of Labor and Industry, in co-operation with the various bureaus of that Department, to determine when a period of extraordinary unemployment, caused by industrial depression, exists. The Act calls for extension of public works of the State as shall be best adapted to supply increased opportunities for advantageous public labor during such periods of temporary unemployment. It is, further provided that no person shall be given employment, in such public works, who shall not be a citizen of the United States and who shall not have been a resident of the State of Pennsylvania for a period of six months prior to his or her application for state employment. As a nucleus for the fund necessary to carry on such activities, the Legislature of 1917 appropriated forty thousand dollars.

I merely cite this legislation in passing to show how carefully Pennsylvania is preparing to meet the needs of labor even in times of depression. However, do not misunderstand my reference to that measure; I am by no means predicting an era of industrial depression after this war.

Pennsylvania as a state is meeting in a big way every emergency condition arising within her boundries during the actual progress of the war. The Legislature, in session in 1917, appropriated \$2,000,000 to be expended by a Commission of Public Safety and Defense, including the Governor, the Adjutant General, the Auditor General and the State Treasurer and which Commission is charged with the duty of preparing for the defense of the Commonwealth, the safety of its people and the protection of their property; and aiding the Government of the United States in protecting and defending the people and property of the National Government.

Governor Brumbaugh, at the outbreak of the war, appointed a Committee of Public Safety for the Commonwealth of Pennsylvania, which Committee includes several hundred public spirited men capable of leading in varied activities essential for the welfare of the people of the Com-

monwealth during a period of war. This State Committee of Public Safety may be considered as the active body operating under direction of the Commission of Public Safety and Defense created by Act of Assembly. Through fifteen separate departments this State Committee of Public Safety has awakened the people of Pennsylvania to vivid realization of the necessity of furtherance of war aims of the Nation. The legislative enactment, creating the Commission of Public Safety and Defense and the appointment by the Governor of the Committee of Public Safety, may however, be classed as a State plan operating to meet every emergency that may arise during the war. The fifteen separate working departments into which the Committee of Public Safety is divided are co-operating with the regular governmental departments of both the State and Nation in promoting every work of war from food conservation to solution of labor problems, and providing home police protection.

An enumeration of the Departments of the State Public Safety Committee is, 1, finance; 2, publicity; 3, legislation; 4, allied bodies; 5, medicine, sanitation and hospitals; 6, civic relief; 7, food supply; 8, materials; 9, plants; 10, motors and motor trucks; 11, civilian service and labor; 12, military service; 13, naval service; 14, guards, police inspection; 15, railroads, electrical railways and motors, highways and waterways. Each of these departments is headed by a director a public spirited citizen of importance in the line of work with which his department has to deal. It may be observed that the program of this well financed and directed State Commission and Public Safety Committee co-ordinated with the programs of the governmental departments of the Commonwealth of Pennsylvania will contribute towards the final evolving of processes and methods to grant against dangerous impact to the economic, industrial or social structure of the State at the close of the war.

Two vital problems that must be met, during the war, and following it, are: First, assimilating properly in industry women performing work heretofore considered as strictly the tasks of men, and second the reconstructing, training and placing, at suitable tasks in industry, members of our armed forces returning from service in disabled condition. Women are performing and will even further perform wonderful service in aiding to win the war. They are bravely assuming duties for which they have in this country, been considered heretofore unadapted.

Today, during the progress of the war they are working under emergency conditions. As long as the war continues, we may expect a continuance of heavy demands for production of munitions by women, in conflict with inherently proper demands for conservation of the health of these women for the present as well as for future generations. It is: immediate production of munitions vs. the future welfare of the people of this country. The one is immediately vital to the nation; the other is just as vital although its immediateness is not so apparent. The solution lies in properly choosing women for the various industrial tasks so that their strength may not be overtaxed, that they may not be devitalized by too long hours; that even their clothing may be designed with a view to safeguarding them from accidents and eliminating unnecessary body strain; that they may be employed in healthful surroundings where every

mechanical safeguard, every facility for adequate light, ventilation and sanitation is provided.

The objection may be here interposed that a proper and scientific distribution of available male labor in this country would render needless, for the present employment of women in industry to tasks heretofore considered as strictly men's work. Such objection is probably well founded but the fact remains that women are entering and have already industrial plants in tasks unusual to women. This has occurred in the absence of such scientific distribution of male labor and in the absence of transfer of men from work that women could perform to heavier tasks in industry.

The extremely complex and preplexing problem of women in industry is, today, in Pennsylvania, being considered by the Industrial Board of the Department of Labor and Industry and by the Woman's Division of the Bureau of Inspection of that Department. The Woman's Law in Pennsylvania has not been let down in any degree on account of the war, although women are every day entering industry in greater numbers. Even at this time women may not be employed in manufacturing establishments in Pennsylvania before six o'clock in the morning nor after ten o'clock at night. They may not work more than ten hours in any one day nor may they work more than fifty hours in any one week, they may not work more than six hours without a lunch period and that lunch period must be forty-five minutes unless they work less than eight hours a day in which case it may be thirty minutes. That law is not only on the statute books, but it is being enforced by one hundred inspectors of the Department of Labor and Industry in all sections of Pennsylvania.

This great problem as well as virtually every other great problem concerning labor and industry in Pennsylvania, the Keystone State, centers ultimately in the Department of Labor and Industry.

Through the Bureau of Inspection of the Department are enforced the woman's laws and laws safeguarding all workers.

The Division of Hygiene and Engineering—including physicians, chemists, and engineers—investigates and reports upon the more technical and specialized problems affecting the health of men and women workers and comprises an expert consulting branch of the Bureau of Inspection. Its findings, presented to the Industrial Board, aid in the preparation of regulations affecting safety and health of workers in the detailed processes and features of industry.

The Industrial Board, empowered to frame these codes and regulations, to make investigations and to give rulings on industry and labor, includes the Commissioner of the Department as Chairman, a representative of employers, a representative of employes, a citizen and a woman. Twenty-eight separate codes for safety have already been formulated by the Board. The codes governing the manufacture of explosives and nitro and amido compounds have especial value at this time.

The Bureau of Mediation and Arbitration is an arm of the Department devoted exclusively and active constantly in endeavoring to avoid or amicably settle dispute between employers and employes.

There is probably no Bureau in the Department of Labor and In-

dustry of Pennsylvania upon which more responsibility rests than upon the Bureau of Mediation and Arbitration. As long as disputes occur between employers and employes the need of a third and neutral agent to mediate the differences—and preferably a state agency—is essential. Today is no time for even temporary cessation in the production of munitions through misunderstandings between employer and employe. 'But remember, both sides must always play fair.

Let me quote for you a recent message to the Pennsylvania Department of Labor and Industry written from "somewhere in France" by Major John Price Jackson whose place I occupy as Commissioner of Labor and Industry for Pennsylvania while he is today representing Pennsylvania in the battle lines of Europe on leave of absence. Major Jackson sends this appeal:

"I hope for the sake of the Democracy of the World and *our boys at the front*, that the employes and the employers of Pennsylvania with your energetic aid are taking such a broad minded and patriotic stand that cessation of work through strikes is a thing of the past. I appreciate fully that this requires as much, or maybe even more sacrifice from employers than from employes. The employer who does not deal generously with the employes in these times of high cost of living, and then berates his employes because they strike and calls them unpatriotic is a very bad citizen, while the employers who demand, merely because they have the power, more than is just, are equally to be condemned."

It is, however, a pleasure for me to say that the employers and employes in the great industrial State of Pennsylvania are today patriotically meeting the tasks put before them and strikes or lockouts are, at present, comparatively rare in our great Commonwealth.

I have, in a measure, digressed from outlining to you the activities of the various branches of the Pennsylvania Department of Labor and Industry and the place they occupy in Pennsylvania's war program.

The Bureau of Employment has established free employment offices in twelve cities of Pennsylvania and in this great work is co-ordinated with the Department of Civilian Service and Labor of the State Public Safety Committee,—which I have previously described,—and with the Federal Department of Labor.

As an example of the work that the Bureau of Employment is doing I may say that it has placed in suitable employment, in the industries of Pennsylvania, approximately 10,000 workers each month of this year. During the month of February alone the Bureau of Employment placed 147 workers on Pennsylvania farms. In the office of the clearing house of the Bureau of Employment at Harrisburg there are, at this instant, extensive card files showing accurately where more than 30,000 soldiers and sailors, handicapped physically from wounds or disease in war service may obtain employment in Pennsylvania's manufacturing establishments. On that subject I shall say more later. I refer to it here merely to present to you the great work that the Bureau of Employment of the Department of Labor and Industry is performing in this time of war.

The necessary expansion of this Bureau to meet war conditions is

developing it so that it will be of greater value to workers and employers after the war than it has ever been before.

A Bureau of Municipalities in the Department of Labor and Industry, as its name implies, is concerned with the welfare of cities and boroughs and was established to collect and disseminate, among the municipalities of Pennsylvania, information tending to bring about standardization of methods of municipal administration and be otherwise helpful to the boroughs and cities of the state. This Bureau is at this time stimulating interest in city planning,—on projects to be consummated after the war,—and is also actively aiding in solving present day problems of housing in the more congested industrial centers. A planning engineer from this Bureau is today with the national government, on leave of absence from the Department working on the solution of industrial housing problems confronting the nation.

The Bureau of Statistics and Information and the Bureau of Workmen's Compensation are also important branches of the Department of Labor and Industry and compile all reports of industrial accidents, classifying those reports to determine the relative hazards of industrial operations and to make certain that workmen's compensation is paid promptly to workers killed in industry or disabled for periods exceeding fourteen days. The legal, or what might be called the judicial, administration of the Workmen's Compensation Law comes under a Board of four members including the Commissioner of Labor and Industry.

In this connection I may say that accident prevention work is by no means a lesser activity of the Pennsylvania Department of Labor and Industry. Every fatal and serious industrial accident is personally investigated by inspectors of a Division of Accident Investigation and instructions are immediately issued to prevent the reoccurrence of such accident. It may be accurately stated that accident prevention is a primary purpose of every Bureau and Division of the Department of Labor and Industry. Masses of safety literature are issued from the Department each year to supplement the personal activities of the inspectors who enforce the laws for safety and the regulations of the Industrial Board. Some idea of the magnitude of this work of accident prevention in Pennsylvania may be realized when I say with deepest regret that in Pennsylvania industries more than 3,000 workers were killed last year and approximately 250,000 others were injured. Compensation awards and payments in Pennsylvania during the year 1917 amounted to more than \$7,000,000.

Among the total number of compensation agreements approved in the Department of Labor and Industry during 1917 there were 182 for hands lost; 52 for arms lost; 71 for feet lost; 49 for legs lost and 447 for eyes lost. Increasing that record by the number of workers otherwise seriously disabled by industrial accidents, one can realize that the present project, of rehabilitating men crippled in war service, may be advantageously continued as a public endeavor after the war, for the rehabilitation of our workers maimed in industry. In fact, rehabilitation of our industrial cripples should even now be considered with the rehabilitation of war cripples.

CATASTROPHE RELIEF.

Another phase of Pennsylvania's plan to meet conditions arising during the war is the preparation for relief in the event of any catastrophe occurring within its limits through explosion, fire or other cause. I wish to call your attention to the fact that Governor Brumbaugh has named as a committee to prepare for relief in catastrophes, the Adjutant General of the State, the Commissioner of Health and the Commissioner of Labor and Industry, as the heads of three State departments through whose combined facilities and supplies there are readily available, day and night, canvas shelter and food supplies for at least one thousand persons,—(these supplies can be delivered at any point of the State within a comparatively few hours)—the names and locations of almost two thousand physicians and surgeons, several hundred nurses, officials of every municipality in the State, the one hundred inspectors of the Department of Labor and Industry with six hundred auxiliary inspectors of boilers and elevators. These forces are in addition to the forces of State Police and the Reserve Militia.

RECONSTRUCTION, RE-EDUCATION AND PLACEMENT IN INDUSTRY OF CRIPPLED SOLDIERS AND SAILORS.

Pennsylvania was, I believe, the first State to co-operate definitely and actively with the office of the surgeon general in the plan to rehabilitate crippled soldiers and sailors and to aid in placing them at suitable industrial tasks. Last fall, Major Mock came to Harrisburg to speak before employers, employes, and representatives of the State and National Governments in the Fourth Annual Welfare and Efficiency Conference conducted by the Pennsylvania Department of Labor and Industry. That conference is virtually an open forum for the advancement of thought on safety and health in industry as well as on similar subjects vital to employers and employes. The arguments of Major Mock at that conference made it obvious to the officials of the Pennsylvania Department of Labor and Industry that the Department could perform a great work in Pennsylvania through its Bureau of Employment and Division of Hygiene and Engineering by making wide inquiry through the thirty thousand industrial establishments of the State to determine where suitable employment might be obtained for soldiers and sailors crippled in war service but reconstructed and re-educated by the National authorities. In January of this year thirty thousand printed questionnaires, of which the one I exhibit is a copy, were sent to employers in all sections of the State.

The front cover page of this folder form of questionnaire presented a letter to the employers of Pennsylvania, outlining the aims of the government in reconstructing and re-educating crippled soldiers and sailors for properly selected tasks in industry. This letter further pointed out that it is a patriotic duty of employers of Pennsylvania to give thought to the matter of providing places in their plants where handicapped persons might be employed.

The main questionnaire appeared on the inside pages of the folder.

It requested employers to indicate the number of handicapped men they could employ. It further pointed out that each disabled soldier or sailor will be equipped by the government with every suitable appliance to bring his efficiency to a maximum and that he will receive the necessary treatment and training to adapt him for selected employment. This questionnaire designated in the column at the left of the page, twenty-one general classes of disability which might handicap the soldier or sailor when the time came to place him in industrial work. The designated disabilities range from loss of one or both of the upper extremities, in full or in part; stiffness of upper extremities, in full or in part; loss of one or both lower extremities, in full or in part; blindness of one eye or both eyes, deafness of one ear or both ears, loss of speech, repulsive facial disfigurements, hernia and general health impairment which would prevent heavy manual labor.

The column on the questionnaire adjoining the disability column was left blank in each instance in order that the type of work or machine operation considered for each disabled applicant could be designated by the employer. The next column provided blank spaces for the employer to indicate the number of each class of positions open for handicapped workers. The final column at the right gave spaces for any remarks.

The back cover page presented a questionnaire asking employers to designate handicapped workers now in their employ, the tasks they were performing and the history of each case as to sex, age when disability occurred, education or training leading to present employment and similar data. This questionnaire was for the purpose of ascertaining positions now held by disabled men in the State of Pennsylvania.

When the complete questionnaire form was sent to Pennsylvania employers, it was with the thought that functional rehabilitation of the injured soldiers and sailors and the occupational reeducation and training for the old or the new position would be performed in every case by the national authorities. It was believed that the re-employment of the reconstructed man was the factor of the problem in which the Pennsylvania Department of Labor and Industry would be principally concerned. Of course, the degree of success attaining the solution of the whole problem demands a systematic and harmonious co-ordination of all related forces.

When it was determined to send out this questionnaire, it was realized that it would fall on comparatively new soil. Employers as a class had probably given little thought to this important project. I firmly believe, however, that we have awakened and are further awakening Pennsylvania employers to a realization of this vital question in a way that will insure avoiding the mere shunting of crippled men into the byproduct occupations of industry.

It may be said that this questionnaire which designates only the general classes of disability and does not attempt to analyze specific operations in the varied classes of industrial work is incomplete. I agree with that statement. This first questionnaire was purposely made inadequate to meet successfully and completely the requirements of a final intensive program for placing crippled men to the best and most efficient advantage in industry. Returns from this questionnaire, tabulated up to March 1st,

indicated 30,710 potential placements for cripples in Pennsylvania industrial plants. When the complete replies to this questionnaire—and replies are still being received—are tabulated, the Bureau of Employment of the Pennsylvania Department of Labor and Industry will have an accurate card index of plants in Pennsylvania where the managements have voluntarily expressed a desire to employ men crippled in war service. The questionnaires already received have been classified according to industry, according to occupations offered for each class of disabled worker, and according to location of each plant. If, even at this time, the office of the surgeon general desired employment for men having lost both legs at the hip joint, the Pennsylvania Department of Labor and Industry could from its present records indicate forty-six places for such workers at tasks varying from baker to draftsman, glass cutter to bench hand machinists, reed and willow worker to sorter or weaver in a textile plant.

But I am fully aware that even with the work already done in Pennsylvania, only the first step in the project of properly placing war cripples in industry has been begun. It may carry us only a short distance toward the ultimate solution of the problem, but the results of this questionnaire will finally be the basis from which further intensive and individual surveys as to occupations and cripples may be met. I feel that we have merely broken the ground and this questionnaire was sent out in its present form solely for that purpose. The occupational analysis to determine the physical requirements for the varied types of employment is a part of the broached program. I am overwhelmingly convinced that the sending of this questionnaire, even in its admittedly incomplete state, is a step in the right direction by thousands of responses that have been received from employers with letters of commendation and offers of support and assistance from great corporations, philanthropic organizations, civic and other associations even from beyond the boundaries of Pennsylvania.

Pennsylvania has, however, within the last two weeks instituted as a Commonwealth the formulation of preliminary plans for the physical restoration, educational training and proper placement, in industry, of disabled Pennsylvanians returning from war service.

Governor Brumbaugh, on March 19, appointed a State Committee comprising the Adjutant General as Chairman, the Commissioner of Health, the Commissioner of Labor and Industry and the Executive Secretary of the State Board of Education to study, in all its phases, the problem of rehabilitating crippled soldiers and sailors in Pennsylvania. The purpose of this committee is to place every facility and all its co-operative bureaus at the service of the national authorities engaged in this work. Such offers of co-operation have already been presented to the Surgeon General. The committee is planning, however, to make its co-operation in the entire project as complete as is possible in order first that it may be of maximum value to the national authorities and second that the State of Pennsylvania may be prepared, in a measure, to solve its own problem in the event of the work, by any reason, becoming decentralized and devolving upon the several states.

Under the direction of the Adjutant General, the head of the military of the Commonwealth, the work is being studied from its three principal angles. The State Department of Health, with its hospitals, tuberculosis

sanatoria, dispensaries, staff and associated physicians and surgeons is considering the physical reconstruction problem.

The State Board of Education, controlling a number of educational institutions equipped with dormitories, infirmaries, gymnasiums, laboratories and vocational training equipments, admirably suited for training convalescent cripples, is considering the educational side of the problem. It may be added that well developed state divisions of vocational training along industrial and agricultural lines are included in the state's present system.

Efforts to induce college students, in Pennsylvania, who abandoned their classes at the outbreak of war, to resume their college work at the end of their service have already been instituted through the Board of Education as a part of the work centering in the State Committee. The College and University Council, composed of presidents of Pennsylvania colleges, has been requested to draft regulations offering every inducement to students in the service to resume their college work after the war and to permit them to change their courses if they so desire as a result of their war experience.

The work of the committee to be performed by the Department of Labor and Industry will be mainly along the lines I have previously outlined as activities already begun by the Department and looking toward the placing of crippled soldiers at suitable tasks in industry. . .

I have endeavored to discuss, in a general way, the many component parts of Pennsylvania's plan, which parts converging should aid in accomplishing our common purpose of winning the war and solving the problems that arise at the close of hostilities.

THE TOASTMASTER: Mr. Carlisle, I believe it was your privilege to welcome the guests at this meeting. I think it would be appropriate if you should pronounce a little valedictory. Mr. Carlisle, President of the Western Efficiency Society.

MR. CARLISLE: A story has been going around for some time with which you are possibly familiar of the negro that they were endeavoring to enlist in the cavalry, and who wished to be an infantryman, and they told him the various advantages, among which was that he should have a horse to ride. But he said he did not like the idea, and they said, "Why?" And he said, "Why, I tell you," he said, "when the General gives the order to retreat I don't want to be bothered with no horse." (Laughter.) And so the time has come, not to retreat, but to advance again to our own works. The Convention, I am sure, of these two Societies has been considered a great success. I have been questioning quite a number and listening to comments, and they seem to be all favorable. We have, I believe, representatives with us from some twenty-seven States, coming from the Atlantic seaboard, the Pacific coast, from Texas, and the Southern States, and from Toronto, Canada, a gathering of the clans. When there was a gathering of the clans in old Scotland things began to happen, and the keynote, as I see tonight, and that we ought to take with us as we go, is that America's greatest problem is not, in spite of the fact of the things we hear, the manufacture of ships or munitions, or the various things necessary for the war, but it is making

of men, stalwart men. Germany boasts of her Hindenburg and a few like, and we have seen the result of that in the last few days with that efficiency, so-called, that has hurled hundreds of thousands of men, knowing not for what they are struggling, into the battle and to death, and I rejoice to think that if Germany has her Hindenburg in whom she is proud, America has her ten thousands Hindenburgs, every one of them as capable and in their positions behind the trenches here shall do as much to drive the vandal of Central Europe back again and finally subjugate him utterly. (Applause.)

I wish it were in my power to give you a great inspiration. I wish it were in my power to fill you with a greater enthusiasm, if possible, than you now have, but such as it is, let us put our American citizenship above every pride in the world. I am glad to see the Frenchmen proud of France, a noble record; I am glad to see the British proud of that Empire upon which the sun never sets, but I rejoice among the pride of Nations that among the newest, but I believe the greatest, is our own America, and it shall be demonstrated in the days to come by men who are your brothers and my brothers, whether in the trenches in Europe or whether in the workshops at home. We shall show the world that they have no cause to be ashamed of their latest great ally in this struggle.

So therefore, my friends, it having been my privilege to welcome you to this Convention, and drawing largely upon my imagination of what should be, to say that it was promising to be a fine thing, to be able to say in these concluding remarks that is has been more than we had even hoped for, and we have this day made a mark in this land that will not soon be forgotten. And so wherever you may go, remember the Queen City of the West, commonly called the Windy City; remember our railroads radiating in every direction; remember our millions of loyal citizens; remember the greater resources that are at hand which we are utilizing; and remember that America's greatest product, regardless of what shall be done in mighty things, shall be her men and women who are lineal and honorable descendants of the men of '76 and 1812 and '61, and I thank God tonight as we are here and as we have gone into this great struggle, our progenitors have no cause to be ashamed of their descendants, and that flag which has stood for freedom and democracy, and this land which has been a refuge for the oppressed of every nation shall a thousandfold be more so in the days to come, and the star of this great land of ours is only in its rising, and we have no idea the possibilities that lay before us, and you, gentlemen, and ladies that here tonight have the unestimable privilege of the making of those things. It is a great thing to enjoy privileges but it is infinitely greater to be among the pioneers who have blazed the way and made possible that which we have today. So let us go to our homes rejoicing in the opportunity that brought us together, with our hearts throbbing even stronger of loyalty and steadfastness of purpose, and let us determine that everything that we have heard and everything that we have seen shall enter into the warp and woof of our existence, and the word "efficiency" shall not be a byword, but shall be a term of honorable men-

tion, and we shall take it to our homes and our workshops, and this old America of ours of which we are so proud shall not only be the pride of ourselves and our children, but shall be the pride of the whole world who are looking to us today as their salvation and their savior in this time of trouble. I thank you. (Applause.)

THE TOASTMASTER: We have been hearing a good deal about the great things that the country has been and is doing, but we have been told of course that it has made some mistakes on account of having to do things in an emergency way. That same thing applies to chairmen of meetings, and I brought in the valedictory before some remarks by Mr. Knoeppel that I would like very much if Mr. Knoeppel would make at this juncture.

MR. KNOEPPEL: In writing there is such a thing as author's license, so in speaking tonight I shall avail myself of speaker's latitude. In other words, I am going to draw a little bit on my imagination as well as some facts in order to paint a picture of the industrial engineer of the future as I see him. In making that statement of fact, as I see it, it is based somewhat upon studies my organization is making on our east coast, the west coast and in Washington. Now, it is easy enough to criticise, and we have all had a chance and have been doing it. At the same time, I believe, when we do criticise, our criticism should be constructive. There have been heard in Washington thousands of reasons why we were not doing things right. After about a million reasons had been totaled up I stopped counting. All over the country you hear the one phrase, lack of co-ordination. One of the big men in Washington said to me, "Why don't you fellows get together? You talk co-ordination but there is no co-ordination. Now," he said, "every man has a more or less different set of principles, they have different divisions, different details. Now, before you can go to Washington as an industrial engineer and show us how to win this war from an industrial angle, doesn't it look as if you people should get together " His point was mighty well taken, and for this reason: Suppose a given piece of work is to be done such as building aircraft or making munitions. You bring from one successful plant its best brain, and you bring from another successful plant its best brain, dump them into Washington, and those men have never had an opportunity of working together. Each man has had experience and has learned to do things a certain way, and they do not know how to get results working another man's way. Therefore, if you have a board of conference or committee of ten members, each one strong, each one successful, each one doing things based on years of experience, you have essentially an enthusiastic bunch of men, and that is the reason why the co-ordinator ultimately must step in. Did a mechanical engineer build this hotel? Did a civil engineer build it? Did an electrical engineer build it? No, they did not. Yet every feature of engineering is in this building, but it required an architect who knew all about certain phases, who could call a specialist on those things to design and construct and put this building in position where we all know it to be, one of the biggest and best hotels in the country. And so in the winning of the war we have got to have the industrial engineering profession on the job in a greater,

bigger, better way than it is today, and in some manner develop a plan of action that will enable us to turn college men and plant men quickly and throw them into shops and co-ordinate the work, and when we do that we will begin to put our punch over. That is so much for winning the war. One of these days we are going to wake up, and everybody will let one glad yell out of his system, "The war is over," and it will be the allied nations that is the winner, whether the war lasts one year or ten years or generations more. But one day the war will be over. The men are all coming back. One of the big bankers in New York said to me recently in discussing plans for the development of their business, "What is going to happen to the world when forty million people are thrown again into peaceful pursuits?" Believe me, I have been giving serious thought to that question ever since. For instance, I understand that it will take over a year, according to the present plans, for the British to demobilize their armies. Whether that is true or not I don't know, but I imagine they have given careful thought to that point because we realize they cannot demobilize armies of that kind in a minute. The head of a twenty million dollar corporation six months ago said to me, "Knoeppel, we want to devise some plan for bringing our workers into closer harmony with this business. What do you think about it?" I said, "It would have to be looked into pretty carefully." He said, "We have got to do something in the line of stock participation, because if we do not, they are going to reach up and take it."

The eight-hour day is coming; you can make up your mind that labor is going to have more profits of industry than they have ever had before. You can make up your mind it is going to have a say in industry with regard to conditions under which it will work. We are going to have women with us in industry and they are going to have a say with regard to conditions under which they will work. Now, we may as well recognize this. I have been accused of being a Bolshevik. Take it for what it is worth. If it is Bolshevism, all right; it is coming. Serious men realize it. I heard a very intelligent workman say, "Boys, this war is showing us one thing, and that is the strength of labor. We are going to have a say about what is going to be done with labor. You remember Mr. Schwab said recently that in the future labor was going to dominate the situation. He might be considered a radical, but you would not call Charles E. Hughes a radical, and he has expressed much the same view. Now, what is the reason behind that fact? That labor is going to have a say, that labor is going to get more money; that labor is going to have an eight-hour day if it wants it.

In closing I will read an article in a fiction magazine called "Popular," which very few read, which expresses the thought in mind.

A POST-BELLUM PROPHECY

BY C. E. KNOEPPEL

One of these mornings, the World will wake to the blessed realization that this great war is over. Men will march home from the various fronts. Factories will stop grinding out instruments of death and destruction and will begin making products for sale. Reconstruction

will begin, and just as sure as fate, a commercial warfare will follow this armed clash.

Problems of adjustment? There will be hundreds of them. Is there one greater than all the others? *Yes, the problem of labor adjustment.*

In a recent issue of *The Popular Magazine* there is an excellent article "They Came Back," by F. Britten Austin, which so eloquently outlines the solution of this problem that I deemed it futile to put my thoughts in my own words and will let parts of the article in question do it for me.

The place is England; the time sometime after the war; the men have come back, among them being Captain Hathaway, son of Sir Thomas Hathaway, head of some large factories. Here are the essentials of the story:

"Captain Hathaway had been toying with a match on the tablecloth. He looked up, quiet and thoughtful, his face clean cut and aristocratic by contrast with the heavy opulence of his sire.

"You don't anticipate labor trouble, then, father?"

Sir Thomas Hathaway laughed—a guffaw—and crashed his hand on the table.

"Labor troubles, my boy! You need have no fear on that score. We're going to teach labor a lesson. We haven't built up our reserve for nothing—not only ourselves, but all the houses in the trade. For long enough we've been dictated to by labor, and now, by Heaven, we're going to crush it! Do you know what's coming, my boy? Have you thought about it? There's going to be the biggest flood of labor chucked on the market that the world has ever known. All of 'em fightin'—*fightin'* for jobs! And the trade, Harry, my boy, is going to lock out! We've closed down now, and we shan't open again till our own good time. How long d'you think the union funds'll last? We'll bust 'em—bust 'em forever and a day. And when we open our shops again to labor it'll be on our own terms. Here, fill up, gentlemen; I can vouch for this wine. Cost a sinful price, it did. We'll bust 'em, my lad, so that never again in our time shall we hear a word of labor trouble." He gulped down the glassful of his sinfully costly wine.

A little later at a meeting of the company directors, Sir Thomas Hathaway talked as follows:

"Now, gentlemen," continued the retiring chief, "before I sit down I should like to give you some account of my stewardship. I think we all of us perceived in the circumstances of the present time an opportunity to settle, once and for all, our score with labor. That opportunity has not been neglected. All the factories owned by us, in agreement with the other houses in the trade, which have most loyally backed our action, have been shut down. The date of their reopening has not yet been decided upon, but I may tell you this, gentlemen—the trade union with which we have had so much trouble in the past is bankrupt. We are entitled to industrial peace on our own terms, but the terms which we have offered and which were not ungenerous in circumstances after safeguarding our interests, have been stubbornly rejected by the men's leader—the man Swain. This left us no alternative but to put on the screw, and we have replied by serving notices of ejection on all those of our ex-employees who are behind in their rent. I think you will agree

with me that in this we have the fullest justice on our side. (Hear, hear!) And now, gentlemen, I retire from my managing directorship and make way for my son in the fullest confidence that he will maintain and extend the great and honorable traditions of this business."

Captain Hathaway stood up. His face was strangely pale and set. "Gentlemen, you have listened to my father's remarks. They represent accurately the theory of our past relationship between ourselves and employees. (Hear, hear!) But, gentlemen, I want to bring home to you that it is a theory quite impossible to maintain at the present day. In accepting the leadership of this house I am fully conscious of my responsibilities—responsibilities not only to you who have financial interests in the business, but to those who live by the employment we offer them and to the state which makes it possible for them to work and for ourselves to derive benefit from that work. From this day, gentlemen, and for so long as I am head of this firm, our relations with our employes are on a different basis. The factories will reopen tomorrow—at the old trade-union rates, excepting where the new rates I have offered to the men are more remunerative to them. The policy of the firm is reversed."

Captain Hathaway, in all his experience of war, had never felt the need of all his courage so much as in making this announcement, which, to himself sounded brutally bald.

One of the directors rose, hanging nervously upon the table with his fist and shaking with rage.

"By Heaven!" he said. "I never thought Tom Hathaway's boy would be a traitor."

Sir Thomas Hathaway half rose and sat down again, looking as though he were going to faint.

Another of the directors stood up.

"Has our new managing director any other harmless little proposals to make?" he asked in bitter sarcasm.

"Yes," replied Captain Hathaway. "I propose to take powers to create a new deferred stock which will rank for dividend after the ordinary stock has received eight per cent, but which will in all circumstances carry a right to vote on the board, and this stock will be vested in the representatives of our employees chosen by them."

"It will never be agreed to by the men," cried a voice.

"It is agreed to already by the men's representatives," replied the new chief, feeling the coolness of courage return to him as once when he had faced the mob of Germans.

The wealthiest of the directors, a man associated with other houses in the trade, rose in his turn.

"I warn you, Hathaway, that I shall dispose of my interests in this business, and I'm going to fight you to the last shilling. You'll be broke in a year."

"All of us!" All of us!" came a chorus of approval. "We'll all fight! This is sheer madness!"

"Fight, if you will, gentlemen," said Hathaway calmly. "It won't pay you. I haven't been idle these three months. I may tell you that I have contracts in my pocket that will keep us going for many months to come—

more than a year. The whole world is shrieking for goods, and Germany is supplying them—capturing your markets while you commit suicide in trying to get the better of labor. In these last months I have established agents all over the world, and I've got the orders. I know what the other houses have got; I know what's open to you. You can't fight us. But you'll be taken over by the government if your obstinacy continues this unworthy industrial strife."

There was a silence of vague-headed, angry old men who did not quite know what to say.

"And now, gentlemen," continued Hathaway, "let me plead for a better spirit. That great mass of human beings you coldly call 'labor' fought for England just as I fought for England, just as thousands of our own class fought. We've been together in the trenches year in year out, and we've learned to know each other, not as hostile abstractions, but as living men, good men the most of us. We learned all sorts of things we didn't realize before the war, but most of all we learned, and when I say we, I mean your sons as well, that we're all Englishmen and that we all have to play the game and stick together—officer and man. D'you think I, who have watched over the comfort of my men, taught them, led them into danger, and seen them unafraid, who have hungered with them, thirsted with them, gloried in them for these last long years—d'you think I can coldly condemn those men and their wives and children to starvation now? D'you think I can treat them as an enemy? I can't. And the men who have been proud of us, their officers, d'you think they haven't learned the value of leadership? They have, but not the leadership of a slave master. In the long, bitter years of strife those men have won for themselves, a freedom of soul which is the life force of a free empire. Class hatred! It has vanished as between officer and man. We're all Englishmen together, and we're going to work share and share alike in the new England that, share and share alike, we fought for!"

He flung open the door behind him.

"Here, gentlemen, is Jim Swain, the leader of your work people in their time of trouble. He saved my life twice—once in the trenches and got a D.C.M. when he ought to have had the V.C., and again today when he set a seal of comradeship between the managing director and the employees of Hathaway's. Together he and I and those we represent are going to make our patch of England worth the lives that were spent to save it."

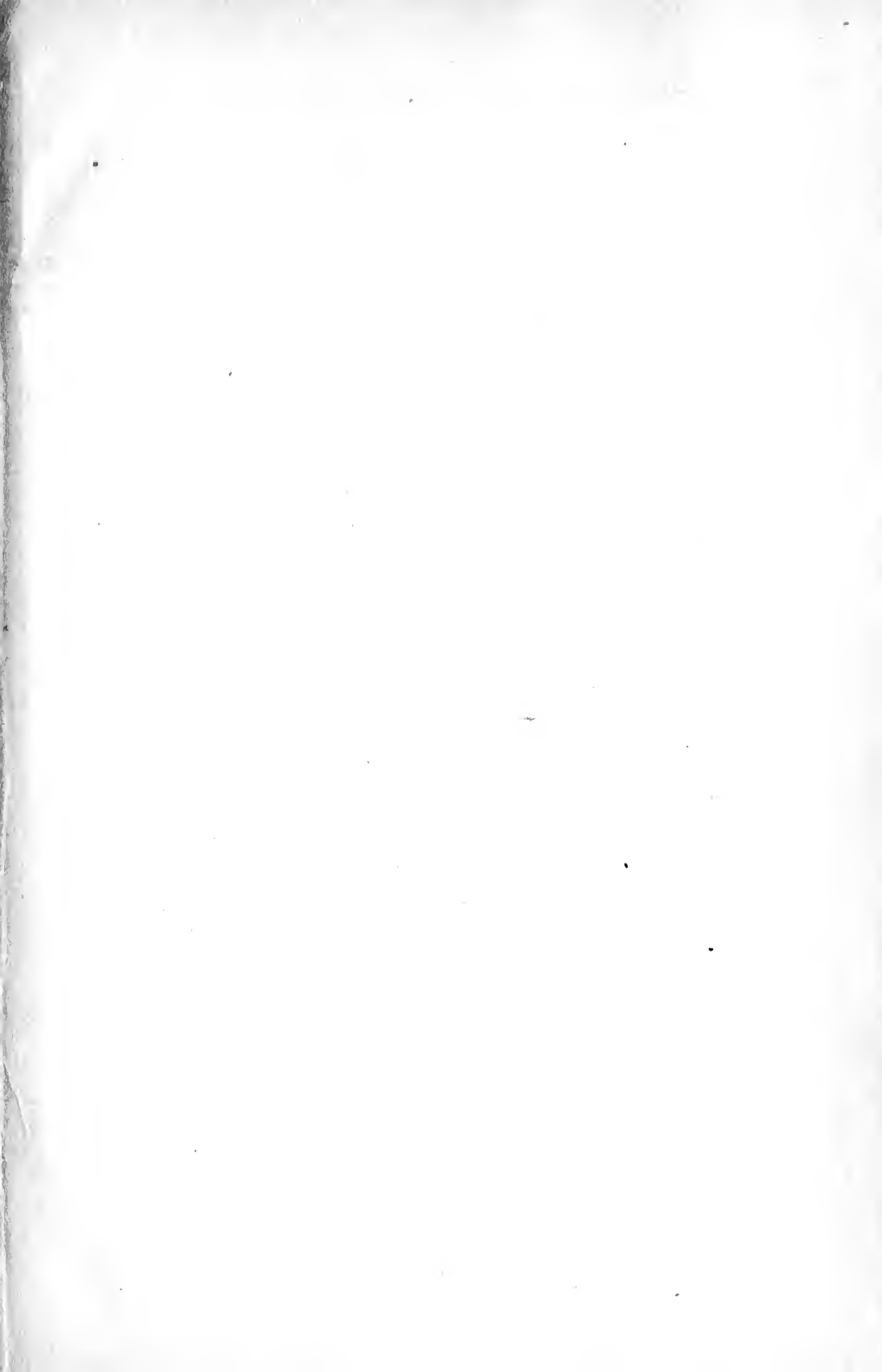
"The ex-soldier took a step forward.

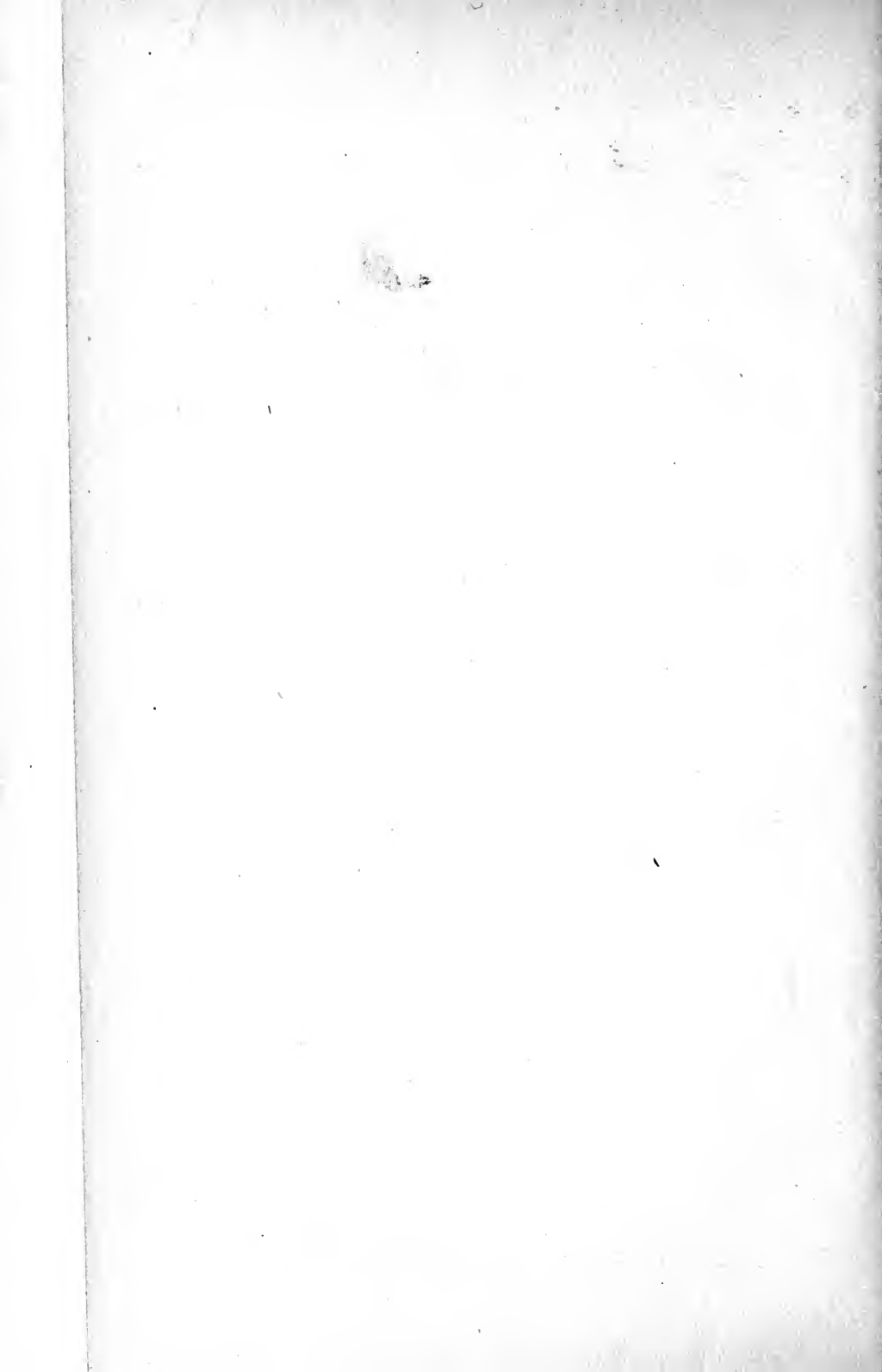
"I should just like to say this, sirs: we men know what it is to have good officers, and we've never let 'em down. We've come back, officers and men, and officers like Captain Hathaway will always find their men will work for them as they used to fight—for officers like him make us feel the old country is worth working for, as it was worth fighting for. We've learned to play the game, and we'll play it so long as we have fair play. The British soldier has learned to die rather than surrender, and the British soldier is just the British workingman."

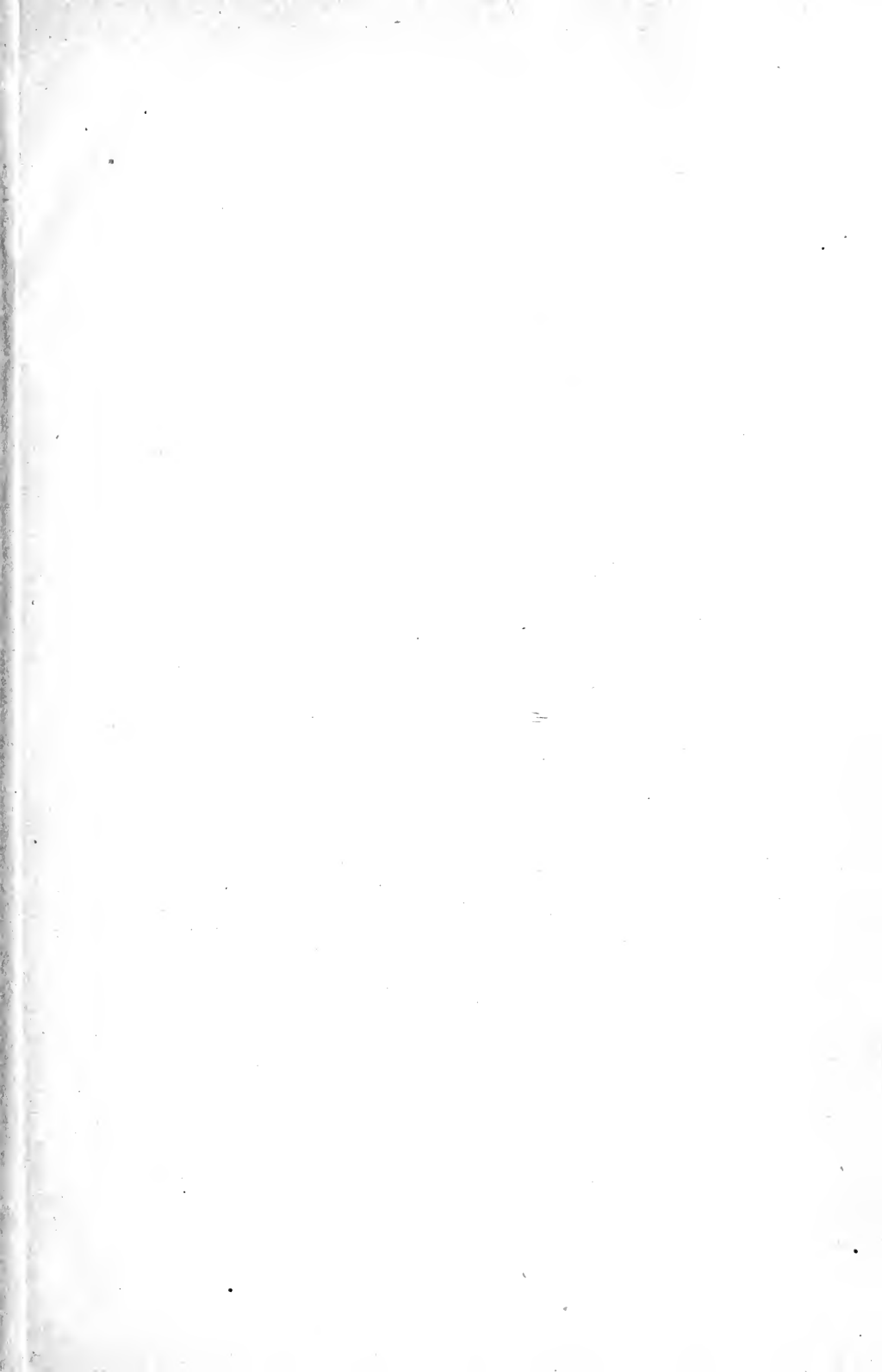
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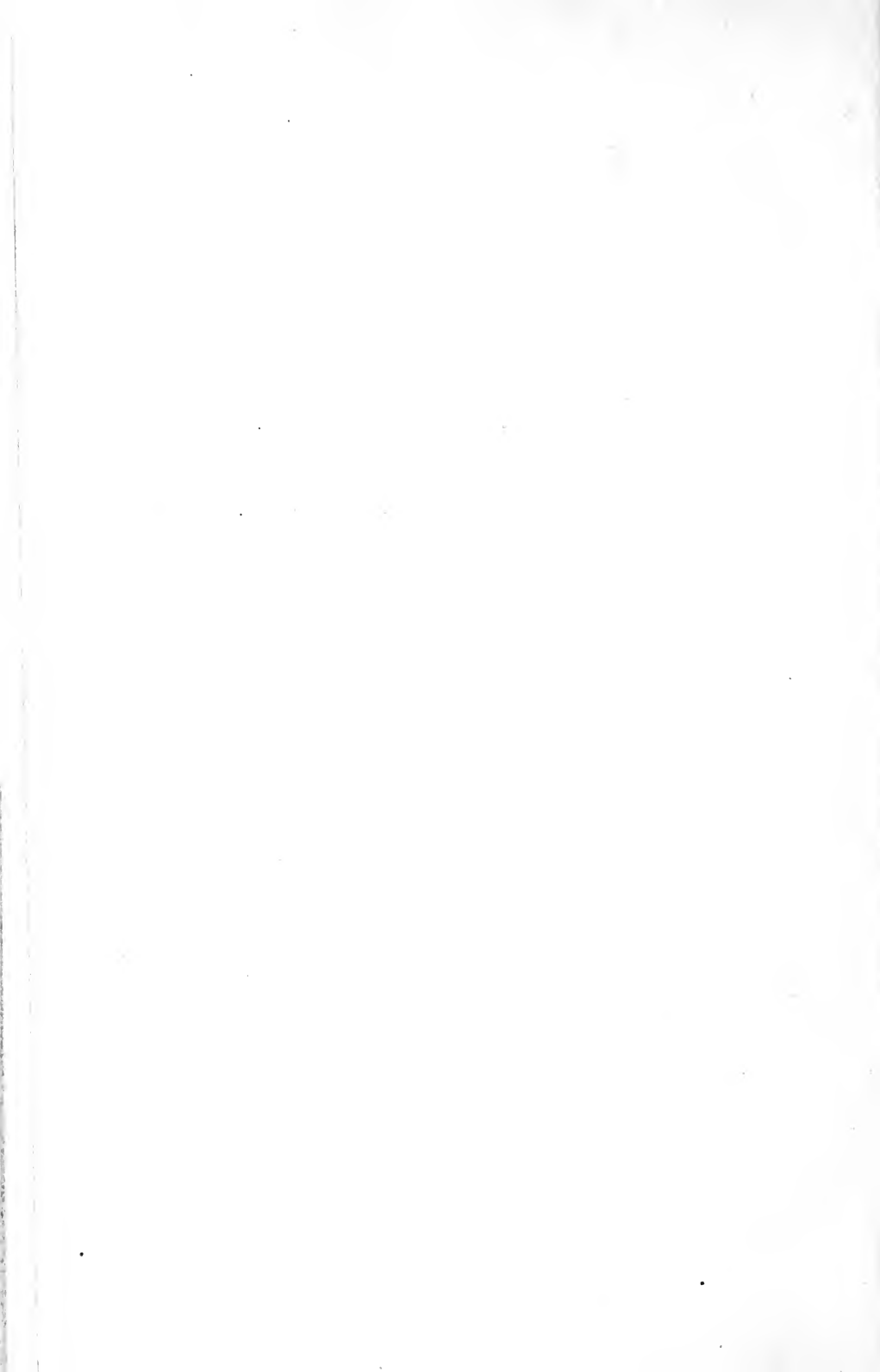
That is in a fiction magazine. I wonder if there is so much fiction in it. The same thing applies to us! Our men are coming back, worker and foreman, your son and my son, when the war is over. There is going to be a get-together, but it is not going to come easy. There are radical labor leaders. Yes, but there are autocratic managers also, and it is those two classes that are likely to have trouble unless the industrial engineer steps in. The industrial engineer is a co-ordinator, having an opportunity to study both sides, the worker's side and employer's side, and can bring together the radical labor leader and the autocratic manager.

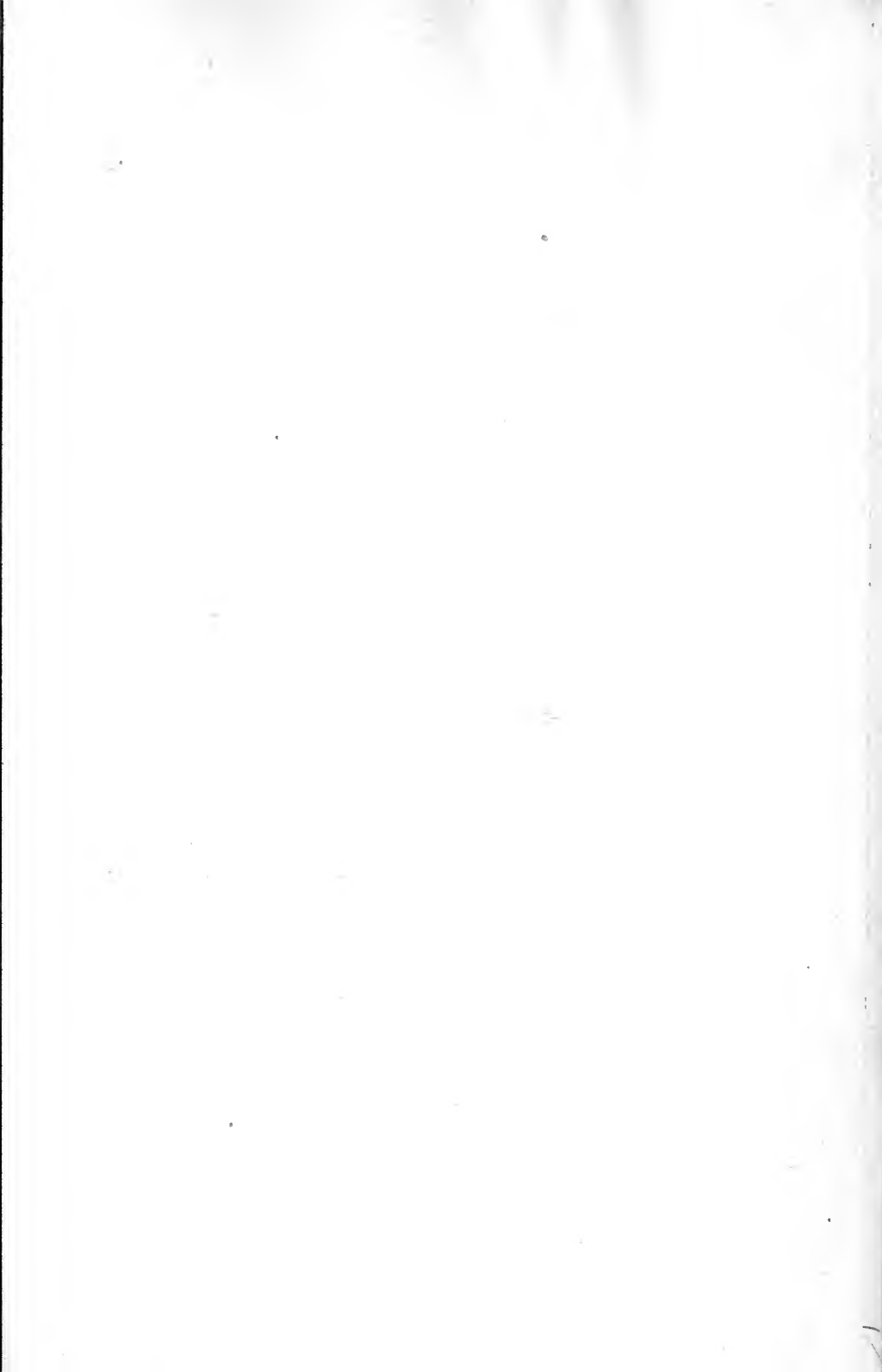
The Conference then adjourned.











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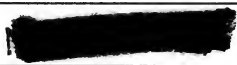
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